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# Federal On Scene Coordinator's Report

## T/V EXXON VALDEZ OIL SPILL

Volume I



United States Coast Guard

Department of Transportation

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# **T/V EXXON VALDEZ OIL SPILL**

## **FEDERAL ON SCENE COORDINATOR'S REPORT**

### **VOLUME I**

U.S. Coast Guard  
Department of Transportation  
2100 2nd Street, S.W.  
Washington, D.C. 20593-0001

Published September 1993

Final Report  
March 24, 1989 to June 10, 1992

Prepared for  
National Response Team (NRT) and  
Alaska Regional Response Team (RRT)

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## Credits and Acknowledgments

This report was prepared under the direction of the Federal On Scene Coordinator (FOSC) for the *Exxon Valdez* oil spill, Anchorage, Alaska.

Captain Dennis Maguire (USCG), the last of the six Coast Guard officers who served as FOSC for the *Exxon Valdez* response, was project manager.

Dr. Thomas M. Leschine, University of Washington, School of Marine Affairs, served as editor-in-chief and lead writer through an Intergovernmental Personnel Act (IPA) assignment.

The primary report authors were Dr. Leschine, Lt. Cdr. Robert Gaunt (USCGR) and Mr. Alan van Emmerik, formerly of the Civil Division of the U.S. Department of Justice.

Additional research and writing was contributed by Capt. Maguire, who also assisted with editing, BM1 Robert Travis (USCGR), Mr. Robert McCready of the University of Washington, School of Marine Affairs, and Ms. Jackie McGee and her associates at Genwest Systems, Inc., Edmonds, Washington.

A research and writing task of this magnitude could not be completed without the assistance of a great many other individuals. BM1 Robert Travis, staff archivist, was of inestimable value for his assistance with research and documentation. YN1 Karen Slota (USCGR) and Ms. Terri Bartels assisted superbly with manuscript preparation and technical editing. Lt. Robert Forgit (USCGR) coordinated the assembly of the report, and Ms. Jackie McGee, Ms. Ellen Shaw and other members of the Genwest Systems staff assisted with production, coordination, graphics and technical editing. The staff of the Oil Spill Information Center (OSPIC) in Anchorage was unfailingly helpful when asked for assistance with research.

The writers also owe a debt of gratitude to Cdr. Joel Whitehead (USCG), who, as the original FOSC historian, established the records system upon which our research depended fundamentally. He also produced an early unpublished draft of this report which, though incomplete, helped us get our bearings. We are also indebted to Lt. J.G. William Kasten (USCGR), who initiated the production of the chronology of events that appears in Volume II, as Appendix A, and to Lt. Cdr. Harry Young (USCGR) and Lt. Tom Staats (USCGR), who provided useful background research and assistance.

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We owe a special debt of gratitude to Vice Admiral Clyde Robbins and Rear Admiral David Ciancaglini for their encouragement and insights as we were beginning what seemed to be a nearly impossible task. Particular thanks go to Rear Adm. Ciancaglini, who as FOSC when we began our efforts on this report, welcomed us with the greatest hospitality into his organization.

We apologize and take responsibility for any errors and omissions.

Dennis M. Maguire  
Captain, U.S. Coast Guard  
Federal On Scene Coordinator  
July 1993



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United States  
Coast Guard



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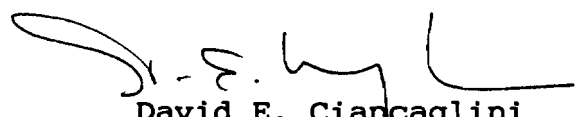
From: Federal On Scene Coordinator, Anchorage, AK  
To: Commandant (G-C)

Subj: FEDERAL ON SCENE COORDINATOR'S REPORT FOR THE T/V EXXON  
VALDEZ OIL SPILL

1. At 0028 hrs. on Friday, 24 March 1989, Marine Safety Office (MSO) Valdez was informed the T/V Exxon Valdez was hard aground and losing cargo at Bligh Reef, Prince William Sound, Alaska. CDR Steve McCall, Commanding Officer of MSO Valdez, initiated a Coast Guard response under authority of the National Contingency Plan (40 CFR 300.2). Response operations continued through June, 1992, when the Federal On Scene Coordinator (FOSC) declared that all Coast Guard field activities had been completed.

2. Section 300.40 of the National Contingency Plan requires that the Federal On Scene Coordinator submit a complete report to the RRT and NRT on "the response operation and the actions taken." This report draws heavily on the documentary record of the response which the FOSC has compiled and is submitted to the RRT and NRT via the chain of command in compliance with that directive. We are prepared to answer questions by your staff and you on matters contained in the report.

  
Clyde E. Robbins  
Vice Admiral  
U. S. Coast Guard

  
David E. Ciancaglini  
Rear Admiral  
U. S. Coast Guard

Encl: (1) T/V Exxon Valdez Oil Spill FOSC Report

Copy: Commandant (G-M)





## Organization of This Report

This report is written in twenty-five chapters. A second volume of appendices is primarily chronological in nature. The report's basic aims are to describe the important events and decisions that defined the more than three-year life of the T/V *Exxon Valdez* oil spill response, and to draw from the many difficulties that were encountered lessons about how better to conduct responses to potential future massive oil spills. The report relies heavily on the written documentary record that exists in the FOSC Exxon Valdez Archive in Anchorage, Alaska, but also makes considerable use of interviews and assorted other materials. It is extensively documented throughout.

The individual chapters are presented in a mix of chronological and topical formats. Each begins with a brief overview and concludes with a chapter summary. The Coast Guard's pollution reports (Polreps) on the *Exxon Valdez* incident and a detailed chronology of events drawn from them and other materials appear in the report's second volume.

Following an introduction to the cultural and natural history of the areas affected by the spill (chapter 1) are two chapters dealing with the earliest events in the response, the stabilization and lightering of the grounded vessel, and efforts to recover the more than 11 million gallons of crude oil that escaped into Prince William Sound (chapters 2 and 3). The next two chapters (chapters 4 and 5) deal with the organization of the response effort, on the part of both the FOSC and supporting organizations, and Exxon, which took overall responsibility for conducting the cleanup.

Chapters 6 through 12 deal with the shoreline cleanup that occupied the great bulk of effort expended over the course of the response. The chapters are both chronological (chapters 6 through 8) and topical (chapters 9 through 12) in their organization. The two chapters which follow (chapters 13 and 14) deal with more all-encompassing activities, waste management and wildlife rescue operations.

Chapters 15 and 16 deal with logistical aspects of the response--communications and air operations support, and vessel operations. Chapters 17 through 20 deal with somewhat broader issues underlying the response, ranging from worker health and safety questions and community impacts and concerns (chapters 17 and 18) to problems in intergovernmental relations and with the FOSC's authority when conducting a response (chapters 19 and 20, respectively).

Chapters 21 through 24 speak to questions of internal organization which the Coast Guard had to face in dealing with the response. The areas of public affairs and protocol, personnel, finance and accounting, and information management are covered.

The last chapter (chapter 25) addresses in summary form the principal findings of this study. It also makes a number of recommendations on how the many problems encountered over the course of the response might be remedied, should oil spill responses of a similar nature become necessary in the future.



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## ACRONYM GLOSSARY

AAC	Alaska Air Command
AANG	Alaska Air National Guard
ACHP	Advisory Council on Historic Preservation
ADAPTS	Air Deployable Anti Pollution Transfer System
ADDSPAC	Aerial/Dispersant Delivery System Package
ADEC	Alaska Department of Environmental Conservation
ADEH	Alaska Division of Environmental Health
ADES	Alaska Division of Emergency Services
ADF&G	Alaska Department of Fish and Game
ADHSS	Alaska Department of Health and Social Services
ADNR	Alaska Department of Natural Resources
ADOL	Alaska Department of Labor
ADPH	Alaska Department of Public Health
ADT	Active Duty for Training
AFB	Air Force Base
ANAD	Anadromous Stream
ANAD SAT	Anadromous Stream Shoreline Assessment Team
AOHA	Alaska Office of History and Archaeology
AOSC	Assistant On Scene Coordinator
AOS-TF	Alaska Oil Spill Task Force
ARCP	Alaska Regional Contingency Plan
ARPA	Archaeological Resources Protection Act of 1974
ASMI	Alaska Seafood Marketing Institute
AST	Atlantic Strike Team
ASTM	American Society of Testing and Materials

ATL	Aerated Treatment Lagoon
ATSDR	Agency for Toxic Substances and Disease Registry
BIA	Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BPA	Blanket Purchase Agreements
CAC	U.S. Coast Guard Headquarters Crisis Action Center
CAMEO™	Computer-Aided Management of Emergency Operations
CDFU	Cordova District Fishermen United
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFI	Chugach Fisheries Inc.
CFR	Code of Federal Regulations
CGD	U.S. Coast Guard District
CGHQ	U.S. Coast Guard Headquarters
CINC	Commander in Chief
CINCSNDFLT	Commander in Chief Prince William Sound
CNM	Chugach/Nana/Marriott
CNN	Cable News Network
COE	U.S. Army Corps of Engineers
COTP	Captain of the Port
CPO	Chief Petty Officer
CRM	Cultural Resource Management
CRPWG	Cultural Resources Protection Working Group
CTAG	Cultural Technical Advisory Group
CV89	CAMEO™ Valdez 1989 database
CV90	CAMEO™ Valdez 1990 database
CV91	CAMEO™ Valdez 1991 database

CWO	Chief Warrant Officer
DETG	U.S. Coast Guard District's Emergency Task Group
DOD	U.S. Department of Defense
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
DOMS	Director of Military Support
DOT	U.S. Department of Transportation
DSR	Defense Senior Representative
EI	Economists Incorporated
EPA	U.S. Environmental Protection Agency
ERT	Emergency Response Team
FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FDA	U.S. Food and Drug Administration
FECA	Federal Employees Compensation Act
FINSAP	Final Shoreline Assessment Program
FOIA	Freedom of Information Act
FOSC	Federal On Scene Coordinator
FS	U.S. Forest Service
FTCA	Federal Tort Claims Act
FTEs	Full Time Equivalents
FWPCA	Federal Water Pollution Control Act
FWS	U.S. Fish and Wildlife Service
G-A	U.S. Coast Guard Headquarters Office of Aquisition
G-C	U.S. Coast Guard Headquarters Commandant
G-CAM	U.S. Coast Guard Headquarters Commandant Accounting Management



G-CI	U.S. Coast Guard Headquarters International Affairs staff
G-CP	U.S. Coast Guard Headquarters Public Affairs staff
G-LCL	U.S. Coast Guard Headquarters Commandant Claims and Litigation
G-M	U.S. Coast Guard Headquarters Office of Marine Safety, Security, and Environmental Protection
G-MEP	U.S. Coast Guard Headquarters Office of Marine Safety, Security, and Environmental Protection Marine Environmental Protection Division (changed to MER in 1990)
G-MEP-2	Pollution Response Branch of Marine Environmental Protection Division
G-MER	U.S. Coast Guard Headquarters Office of Marine Safety, Security, and Environmental Protection Marine Environmental Response Division
G-MER-2	Pollution Response Branch of Marine Environmental Response Division
G-MP-2	Plans and Analysis Branch of U.S. Coast Guard Headquarters Office of Marine Safety, Security, and Environmental Protection
G-P	U.S. Coast Guard Headquarters Office of Personnel and Training
G-PE	U.S. Coast Guard Headquarters Enlisted Personnel Division
G-PO	U.S. Coast Guard Headquarters Officer Personnel Division
G-PO-2/C	Officer Assignment Branch of the U.S. Coast Guard Headquarters Officer Personnel Division
G-R	U.S. Coast Guard Headquarters Office of Readiness and Reserve
G-TIS	Information Systems Division of the U.S. Coast Guard Headquarters Office of Command, Control, and Communication
GAO	U.S. General Accounting Office
GIS	Geographic Information System

GOA	Gulf of Alaska
GPO	U.S. Government Printing Office
GT	Gross Ton
HMAC	Homer Multi-Agency Advisory Committee
HOR	High Oil Residue
HPLC	High Performance Liquid Chromatography
IBRRC	International Bird Rescue Research Center
ICP	Incident Command Post
ICS	Incident Command System
ICT	Incident Command Team
IH	Industrial Hygiene
INMARSAT	Telephone Commercial Satellite
ISCC	Interagency Shoreline Cleanup Committee
ITD	Inactive Duty for Training
JCC	Joint Communications Center
JCS	Joint Chiefs of Staff
JMC	Joint Movement Center
JTF	Joint Task Force
JTF-AK	Joint Task Force-Alaska
JTOC	Joint Transportation Operations Center
KECE	Kodiak Environmental Cleanup Effort
KESC	Kodiak Emergency Service Council
KISCC	Kodiak Interagency Shoreline Cleanup Committee
LCM	Landing Craft, Medium
LCV	Landing Craft Vessel
LRC	Logistics Readiness Center
MAC	Multi-Agency Advisory Committee

MARPOL	Marine Pollution Prevention Convention
MAYSAP	May Shoreline Assessment Program
MIPR	Military Interdepartmental Purchase Request
MLCPAC	Pacific Area Maintenance and Logistics Command
MMC	Marine Mammal Commission
MOA	Memorandum of Agreement
MOR	Medium Oil Residue
MOU	Memorandum of Understanding
MPC	Marine Pollution Control, Inc.
MSO	Marine Safety Office
NCP	National Contingency Plan
NEBA	Net Environmental Benefit Analysis
NET	National Emergency Team
NETAC	National Environmental Technology Applications Corporation
NGO	Non-Governmental Organization
NHPA	National Historic Preservation Act of 1966
NIMS	National Incident Management System
NIOSH	National Institute of Occupational Safety and Health
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NOTAM	Notice to Airmen
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
NPFC	National Pollution Funds Center
NPS	U.S. National Park Service

NRDA	Natural Resource Damage Assessment
NRT	National Response Team
NSF	U.S. Coast Guard National Strike Force
NTR	No Treatment Required
NTSB	National Transportation Safety Board
OCMI	Officer in Charge Marine Inspection
OE	Operating Expense
OP	Oiled Pores
OPA 1990	Oil Pollution Act of 1990
ORD	U.S. Environmental Protection Agency's Office of Research and Development
OSC	On Scene Coordinator
OSC/RPM	On Scene Coordinator/Remedial Project Manager
OSHA	U.S. Occupational Safety and Health Administration
OSHTF	Oil Spill Health Task Force
OSV	Off-Shore Supply Vessel
PAHs	Polyaromatic Hydrocarbons
PIAT	Public Information Assistance Team
PHS	Public Health Service
Polrep	Pollution Report
PROWL	Popweed Retrieval, Oil Washed, and Loosed
PST	Pacific Strike Team
PWS	Prince William Sound
PWSA	Ports and Waterways Safety Act
PWSAC	Prince William Sound Aquaculture Corporation
PWSCA	Prince William Sound Conservation Alliance
R&D	Research and Development

RADM	Rear Admiral
RAT	Resource Assessment Team
RCAC	Prince William Sound Regional Citizen's Advisory Committee
RCC	U.S. Coast Guard Rescue Coordination Center
RCP	Regional Contingency Plan
RCRA	Resource Conservation and Recovery Act
RMAC	Resource MAC
RRT	Regional Response Team
SADT	Special Active Duty for Training
SAT	Shoreline Assessment Team
SCAT	Shoreline Cleanup Assessment Team
SCG	Scientific Coordinating Group
SCOT	Shoreline Cleanup Oversight Team
SSC	Scientific Support Coordinator
SF-44	Standard form agreement
SHPO	State Historic Preservation Officer
SKC	Chief Storekeeper
SLAR	Side-Looking Airborne Radar
SOLAS	Safety of Life at Sea
SONS	Spill of national significance
SOSC	State On Scene Coordinator
SSAT	Spring Shoreline Assessment Team
STAG	State Technical Advisory Group
SUPSALV	U.S. Navy Supervisor of Salvage
TAC	Total aromatic contaminant
TAD	Temporary Additional Duty

TAG	Technical Advisory Group
TAPA	Trans Alaska Pipeline Act
TCC	Transportable Communications Center
TEMAC	Temporary Active Duty
TONOs	Travel Order Numbers
TOP SCOT	Commander in Chief of the Shoreline Cleanup Oversight Team
TPH	Total Petroleum Hydrocarbon
UHF	Ultra High Frequency
USAF	U.S. Air Force
U.S.C.	U.S. Code
U.S.C.A.	U.S. Code Annotated
USCG	U.S. Coast Guard
USCGC	U.S. Coast Guard Cutter
USDA	U.S. Department of Agriculture
USN	U.S. Navy
UV/IR	Ultraviolet/Infrared
VHF	Very High Frequency
VTs	Vessel Traffic Service
WAK	Western Alaska
WIMP	Winter Interagency Monitoring Program





# PREFACE

## THE CASUALTY

At 2121 on Thursday, 23 March 1989, the tank vessel *Exxon Valdez* reported that it was clear of the dock at its berth at the Alyeska Pipeline Terminal and moving toward the Valdez Narrows, on course to Prince William Sound and the Gulf of Alaska.<sup>1</sup> Two hours after departure, the vessel cleared the Valdez Narrows, and the engines were slowed to permit the harbor pilot to disembark. Following the pilot's departure, the ship's engines were commanded to full ahead. During the next half hour the vessel's bridge complement became concerned about floating ice within the shipping lanes and a course correction was made. While the details of what happened during the next thirty minutes are disputed, the ship moved out of the normal shipping lanes, taking a course leading directly toward Bligh Reef (figure 1).<sup>2</sup>

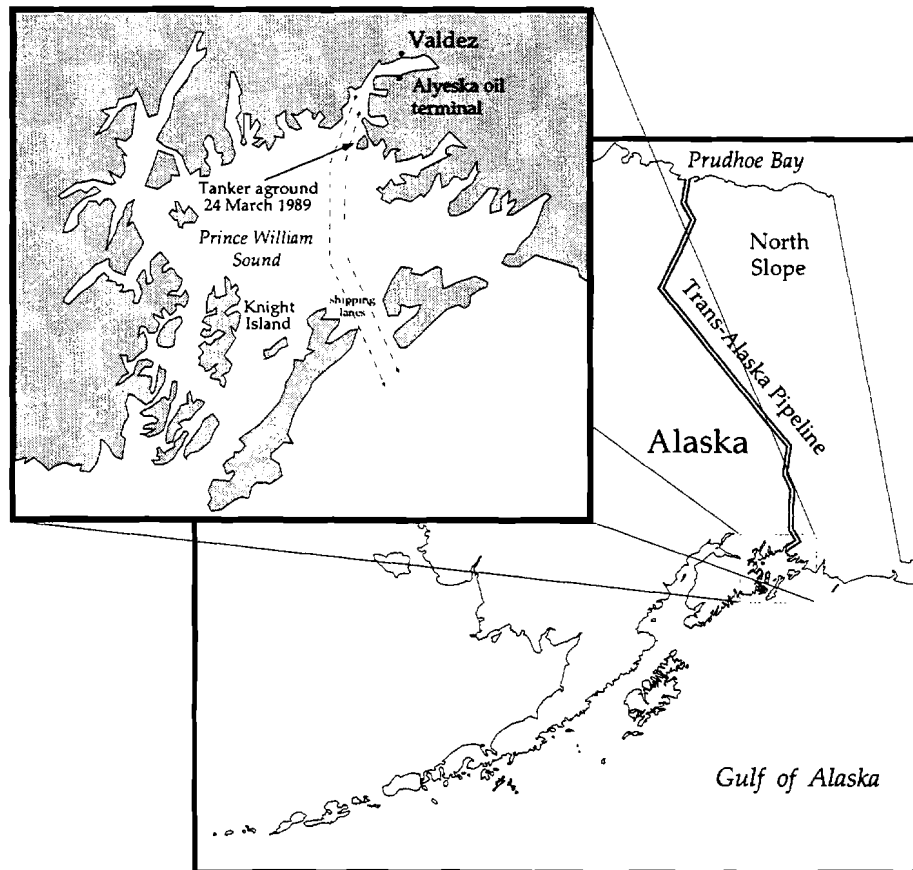


Figure 1. The Alaska Pipeline and the tanker traffic lane from Valdez to open waters.

Source: Reproduced with permission from Exxon Company, USA.

1. Alaska Oil Spill Commission, T/V Exxon Valdez Oil Spill Chronology, in "Spill: The Wreck of the Exxon Valdez," vol. 6, appendix N, no. W1593, FOSC Exxon Valdez Archive, 8.

2. Ibid., 17–18.

Winds were calm, the temperature was thirty-three degrees, and at midnight, the skies were cloudy. Records indicate that there was a realization on the bridge that the vessel was off course. A hard right turn was ordered, but it came too late. At four minutes past midnight, on 24 March, the vessel went hard aground. The *Exxon Valdez*, loaded with 1,264,155 barrels of North Slope crude oil, had grounded on the hard rock reef below, opening eight of its eleven tanks. Oil began leaking from the vessel immediately, at a rate of tens of thousands of barrels per hour.<sup>3</sup>

Within thirty minutes, a response effort was underway, having been initiated by Coast Guard Commander Steven A. McCall, commanding officer of Marine Safety Office (MSO) Valdez. It quickly became apparent that what McCall and his command were facing was this nation's largest vessel oil spill, an 11.2 million gallon catastrophe which would ultimately cost billions to clean up, involve thousands of workers, and capture the attention of the world.

### THE PURPOSE OF THIS REPORT

The purpose of this report is to document and evaluate the response, focusing on the Coast Guard's efforts to deal with the unprecedented challenges presented by the *Exxon Valdez* grounding and subsequent massive oil release. The chapters which follow consider a broad range of topics, each of which presented a unique set of challenges. The National Contingency Plan specifies that:

The OSCs [On Scene Coordinator's] report shall accurately record the situation as it developed, the actions taken, the resources committed, and the problems encountered. The OSCs recommendations are a source for new procedures and policy.

The report is to include:

- (1) [A] Summary of events,...including:
  - (i) The cause of discharge or release;
  - (ii) The initial situation;
  - (iii) Efforts to obtain response by responsible parties;
  - (iv) The organization of the response, including state participation;
  - (v) The resources committed;
  - (vi) The location of the...oil discharge;
  - (vii) Effects on natural resources;
  - (viii) Comments on Federal or State damage assessment activities and efforts to replace or restore damaged natural resources;
  - (ix) Details of threat abatement actions taken; and
  - (x) Public information/community relations activities.
- (2) Effectiveness of Removal Actions—A candid and thorough analysis of the effectiveness of removal actions taken by:
  - (i) The responsible party;
  - (ii) State and local forces;
  - (iii) Federal agencies and special forces; and

---

3. Ibid., 1-2.

- (iv) Contractors, private groups, and volunteers.
- (3) Problems Encountered—A list of problems affecting response with particular attention to problems of inter-governmental coordination.
- (4) Recommendations—OSC recommendations, including at a minimum:
  - (i) Means to prevent a recurrence of the discharge or release;
  - (ii) Improvement of response actions; and
  - (iii) Any recommended changes in the National Contingency Plan or Federal regional plan.<sup>4</sup>

This report will not attempt to assess the causes of the accident itself, a question which has been aired extensively in a variety of other fora.<sup>5</sup>

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4. 40 CFR 300.40 (a) and (b).

5. Prominent among documents which discuss the failures which led to the *Exxon Valdez* grounding are: National Transportation Safety Board, "Marine Accident Report: Grounding of the U.S. Tankship Exxon Valdez on Bligh Reef, Prince William Sound Near Valdez, Alaska, March 24, 1989" (report no. NTSB/Mar-90/04, 31 July 1990), no. W1962, FOSC Exxon Valdez Archive; Alaska Oil Spill Commission, Implications for Safe Transportation of Oil, in "Spill: The Wreck of the Exxon Valdez"; S. Skinner (DOT), and W. K. Reilly (EPA), "The Exxon Valdez Oil Spill: A Report to the President" (prepared by the National Response Team, May 1989), no. C1399, FOSC Exxon Valdez Archive; and the court documents filed in the U.S. Government case against Captain Hazelwood. The Coast Guard's investigating officer, CWO Mark Delozier, also produced investigating operators notes of the cause (M. Delozier, "Investigation File Worksheet," 24 Mar. 1989, no. C931, FOSC Exxon Valdez Archive).



# CHAPTER 1. CULTURAL AND NATURAL HISTORY OF PRINCE WILLIAM SOUND AND WESTERN ALASKA

## OVERVIEW

This chapter is devoted to providing an understanding of the setting in which the spill occurred, emphasizing both physical and cultural features of the affected region. Brief descriptions of the geography of Prince William Sound and western Alaskan areas affected by the spill serve to illustrate the factors of scale, remoteness, and difficulty of access with which spill responders had to contend. A discussion of the area's cultural history makes the point that, while lightly populated, the affected region has not only significant economic activity, but also a culturally rich past, both of which had to be respected as the response proceeded. Finally, the area's climate, its rich natural diversity, and its complex system of land ownership all worked to shape the decision processes at work as resource protection and cleanup operations proceeded.

## THE GEOGRAPHY OF PRINCE WILLIAM SOUND

Prince William Sound is located in south central Alaska, in the northeastern Gulf of Alaska. Its more than three thousand miles of shoreline is rugged, remote, and largely uninhabited. Among its most remarkable features are deep fjords that often terminate in tidewater glaciers.<sup>1</sup> Of the more than 150 glaciers in the area, about twenty reach to the sea.

Prince William Sound contains fifteen major islands (over fifteen square miles in size), the largest of which is Montague Island. In addition, there are nineteen minor islands (over one square mile), more than 150 lesser islands, and hundreds of islets, sea stacks, exposed rocks, and reefs (figure 1.1). Maximum depth of the sound is 2,850 feet (at a location near Lone Island in the northwestern quadrant). Much of the area is surrounded by the Chugach Mountains, with peaks rising to elevations of thirteen thousand feet.<sup>2</sup> Mountainsides often continue into the water, resulting in great depths close to shore.<sup>3</sup> Some shorelines consist of sheer rock faces, while others slope gently with large intertidal areas. The term "beach" as it is normally understood is not particularly applicable in the vast majority of the response area, as shorelines are typically rocky, ranging from gravel and cobble shores to "armored" shorelines covered with sizable boulders (table 1.1).

Many areas within the sound experienced a major physiographic rearrangement as a result of the massive earthquake (the largest recorded in North America) which struck the area in 1964, causing large-scale changes in many landforms, both above and

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1. J. Van Hyning, "Prince William Sound," *Alaska Geographic* 2, no. 3 (1975): 9.

2. P. Mickelson, *Natural History of Alaska's Prince William Sound* (Cordova, Alaska: Alaska Wild Wings Pub., 1989), 1.

3. Much of Prince William Sound features depths greater than one hundred fathoms (six hundred feet).

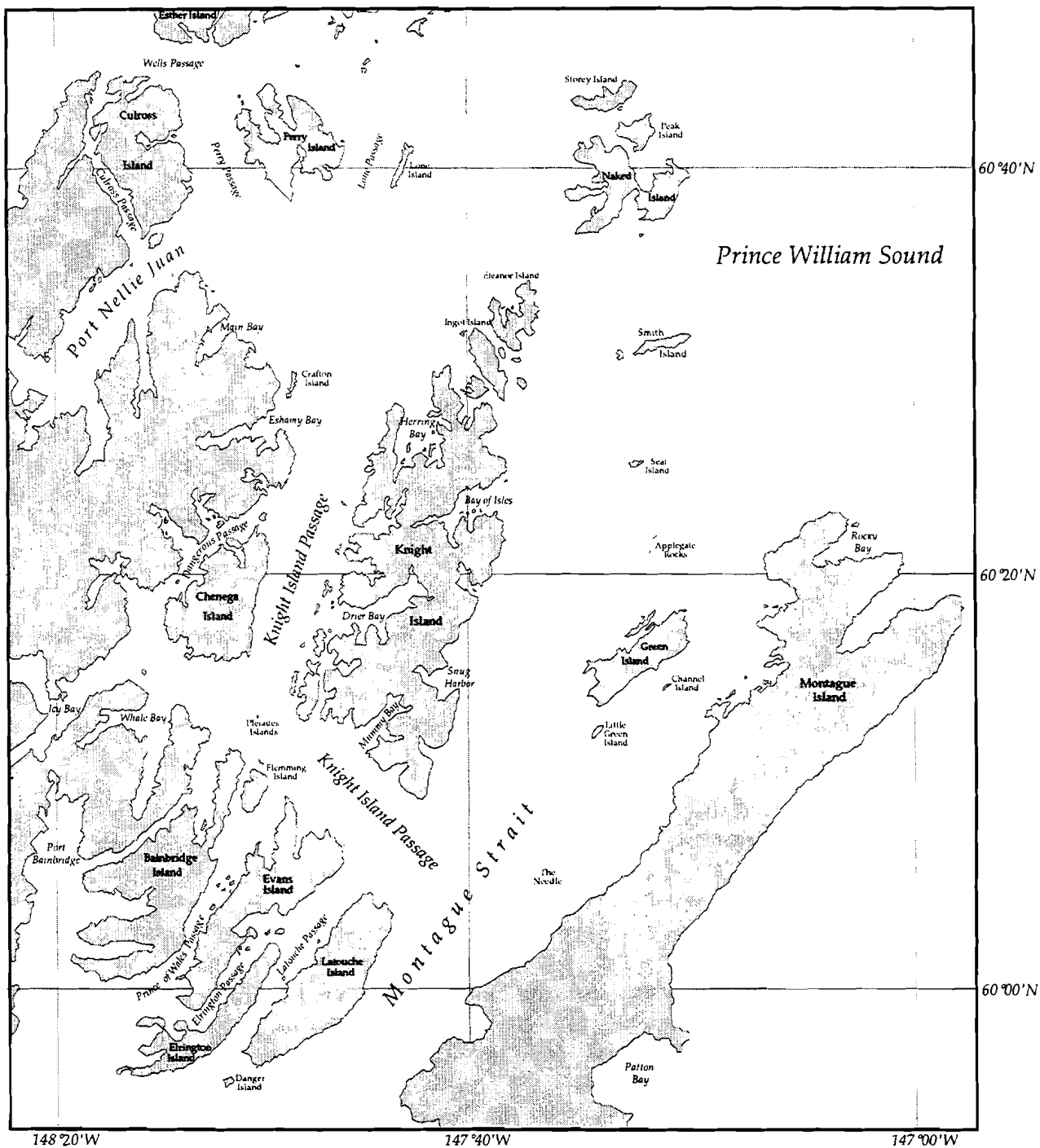


Figure 1.1. Map of Prince William Sound area affected by the Exxon Valdez oil spill.

beneath the sea. Some shorelines were heaved as much as thirty-eight feet above their former levels. In other places, the land dropped as much as 7.5 feet.<sup>4</sup> The new profile of shorelines in the response area influenced both cleanup work (when existing maps

4. Committee on the Alaska Earthquake of the Division of Earth Sciences National Research Council, *The Great Alaskan Earthquake of 1964* (Washington, D.C.: The National Academy of Sciences, 1971), ix (preface).

or navigation charts failed to account for significant earthquake-caused alteration) and the way oil affected some shorelines.<sup>5</sup>

First time visitors to Prince William Sound are often surprised at its vastness. It is roughly fifteen thousand square miles in extent.<sup>6</sup> A number of response leaders later observed that critics of the cleanup often lacked an understanding not only of the distances involved, but also of the area's remoteness. In more conventional settings, responders have the benefit of closer proximity to the necessary equipment and supplies, and much easier access to the impacted shorelines. In Prince William Sound there was no road access to any of the impacted areas, and all resources had to be either flown in or conveyed by vessels, often over substantial distances.<sup>7</sup> At the same time, Prince William Sound is larger than the state of Rhode Island (figure 1.2). In the eastern part of the sound open water distances can extend to twenty miles.



Figure 1.2. Relative size of Alaska compared to the continental United States.

Anchorage, Alaska's largest city (population 225,000), serves as a center of transportation, commerce, and services for much of the state. At its closest proximity, it is sixty miles from Prince William Sound. It is 125 air miles, and 297 road miles, from Valdez, which became the center of response activity in 1989.

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5. J. Michel and M. O. Hayes, "Geomorphological Controls on the Persistence of Shoreline Contamination from the Exxon Valdez Oil Spill" (prepared for the Hazardous Materials Response Branch of the National Oceanic and Atmospheric Administration (NOAA), Feb. 1991), 306 and appendix.

6. Debates about how to measure the size of Prince William Sound are found in Van Hyning, 7; and Mickelson, 1.

7. N. Johannsen and E. Johannsen, *Exploring Alaska's Prince William Sound* (Anchorage: Alaska Travel Publications, Inc., 1975). Johannsen and Johannsen observed that: "Traveling by automobile is the least efficient way to see Prince William Sound. The Alaska highway system touches the sound at only one point: Valdez. The steep terrain of the area has made road-building prohibitively expensive; the sparse population and lack of development, as well as the presence of relatively unspoiled wilderness, have made highways undesirable."



## A BRIEF HISTORY OF PRINCE WILLIAM SOUND AND WESTERN ALASKA

Native settlements in Prince William Sound are thousands of years old. The first aboriginal settlers probably came from the west, either through the Portage Pass, or by paddling *umiaks* (large open boats) around the Kenai Peninsula. Finding an area with abundant supplies of fish, whales, seals, sea lions, and land animals, these adventurers established settlements.

TABLE 1.1

Shoreline length and type within the coastal regions that were impacted by the *Exxon Valdez* oil spill (in km).

Shoreline Type	Prince William Sound	Kenai Peninsula	Shelikof Strait	Kodiak Island
Exposed Rocky Coast	322	505.7	243	190.5
Exposed Wave-cut Rock Platforms	263	7.63	402	450
Fine-grained Sand Beaches	26.5	1.85	1.0	30
Coarse-grained Sand Beaches	4.0	29.4	42	5.4
Exposed Tidal Flats	2.6	1.8	20.8	3.2
Mixed Sand and Gravel Beaches	517	173.5	911	623.2
Gravel Beaches	517	138.5	223	291.3
Sheltered Rocky Coasts	758	389	222	623.6
Sheltered Tidal Flats	80	80.8	239	39.9
Salt Marshes	38	28.6	154	48.1
<b>Totals</b>	<b>2528</b>	<b>1353.5</b>	<b>2459</b>	<b>2305.5</b>

Source: J. Michel and M. O. Hayes, "Geomorphological Controls on the Persistence of Shoreline Contamination from the Exxon Valdez Oil Spill" (prepared for the Hazardous Materials Response Branch of NOAA, Feb. 1991), 33.

The number of Chugach Eskimos living in Prince William Sound in prehistoric times was only about five to six hundred, according to historians. They were widely dispersed throughout the sound. Later arrivals of Tlingit and Eyak Indian groups appear to have resulted in sometimes violent confrontations. Given the abundance of resources in the area, anthropologists found the low numbers of Natives dwelling there somewhat perplexing.<sup>8</sup>

European explorers reached the sound in 1741, as the Dane Vitus Bering led a Russian expedition which landed briefly near present-day Cordova. Included in the party was

8. K. Birket-Smith, *The Chugach Eskimo* (Kobenhavn: Nationalmuskeets Publikationsfond, Nationalmuskeets Skrifter, Etongrafisk Roekke, VI, 1953), 22.

the famous German naturalist, Georg Steller, who sketched and named many of the plants and animals in the area (including Steller sea lion and the never-again reported Steller sea cow). In 1778 the English navigator Captain James Cook, in his quest for the Northwest Passage, spent several days in the sound, exploring, making repairs, and obtaining fresh water. With him was staff officer William Bligh. Bligh later gained infamy as the captain of the HMS *Bounty*.<sup>9</sup> Bligh Reef, upon which the *Exxon Valdez* grounded, was named for the same British officer.

It was during this period of early British exploration that Prince William Sound was named after William Henry (1765–1837), the Duke of Clarence and the third son of King George III, who became King William IV of England upon his father's death in 1830.<sup>10</sup> A visit by the Spanish cartographer, Don Calvidor Alvador Fidalgo, in 1790, gave Prince William Sound two of its more recognizable names. "Bahia de Cordova" (the Bay of Cordova, now Orca Bay) was named after Luis de Cordova, a prominent Spanish naval officer, and "Puerto Valdes" (Port Valdez) was named in honor of Admiral Antonio Valdes y Basan, head of the Spanish Navy.<sup>11</sup>

Russian influence became prominent in the late 1700s and through a significant portion of the 1800s, despite visits by Spanish, Portuguese, French, American, and English explorers.<sup>12</sup> Russians established the first permanent European settlement in the area in 1793, when Fort Constantine and Helen, an outpost at Hinchinbrook Island, was organized.<sup>13</sup> A Russian leader, Aleksandr Baranov, solidified Russian eminence in the area when he married a "Native princess" from the village of Chenega in western Prince William Sound. Russian interests in the area were stimulated by abundant sea otters and the wealth which was produced by otter pelts.<sup>14</sup>

Russian interest waned after the sea otter population had been substantially reduced. In 1867, when the United States government purchased the Alaskan territory, the population in Prince William Sound consisted of Natives and a handful of traders.

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9. R. G. Albion, "William Bligh," in *The Encyclopedia Americana (International Edition)*, vol. 4 (Danbury, Conn.: Grolier Corporation, 1986), 72.

10. J. C. Beaglehole, ed., "The Voyage of the Resolution and Discovery," in *The Journals of Captain James Cook On His Voyages of Discovery, 1776–1780*, part one (Cambridge: The University Press [Published for the Hakluyt Society], 1967), 356. In May 1778, when Cook was in the Sound, his journals record that he "left the name Sandwich Sound." It was later changed to Prince William Sound, perhaps because Sandwich felt that his name had already been celebrated in other areas. Another theory, less accepted by scholars, is that Sandwich's political opponents effected the change following his descent from power.

11. D. J. Orth, *Dictionary of Alaska Place Names*, Geological Survey Professional Paper 567 (1971; reprinted with minor revisions, Washington: U.S. Government Printing Office, 1967), 238 and 1017.

12. A. H. Brooks, *Blazing Alaska's Trail*, ed. B. L. Fryxell (Fairbanks: University of Alaska Press, 1953), 151. Brooks felt that Spanish interests in the area were probably motivated by desires to extend a "dying empire." Other Spanish quests had more typically evolved about silver or gold, rather than furs.

13. H. H. Bancroft, *History of Alaska, 1730–1885* (New York: Antiquarian Press, Ltd., 1959), 414. Fort Constantine and Helen was located at Nuchek, on Hinchinbrook Island.

14. C. M. Naske and H. Slotnick, *Alaska, A History of the 49th State*, 2d ed. (Norman, Okla.: University of Oklahoma Press, 1987), 28.

## WESTERN ALASKA

Geographers divide the area that was termed “western Alaska” in the spill response into several subsections.<sup>15</sup> These include the outer Kenai coastal area, the outer Cook Inlet area, the Alaska Peninsula’s Pacific coast, and the Kodiak Island region (figure 1.3). It is believed that the area was settled as early as 6,500–7,000 years ago. Although the historic record consists only of artifacts, early residents of the area are known to have dwelled in communities, utilized tools and pottery, practiced rituals for their dead, and to have had complex cultural relationships.<sup>16</sup>

There were early attempts to establish trade with Natives at Kodiak Island, but the newcomers were driven off through attacks by Koniag Natives. Motivated by the depletion of sea otters in the waters closer to home, Russian fur seekers returned to the area in 1784, to subdue Native residents and establish fur hunting operations. Three Saints Bay, on Kodiak Island, thus became the foothold from which further enterprises were launched, and outposts were soon established at several mainland locations. The usual mode of operation was to enslave Native laborers through holding tribal leaders, women, and children as hostages.<sup>17</sup>

With the coming of Russian influence, the Native cultures suffered from newly introduced diseases, warfare, subjugation, and other cultural disruptions. A particularly devastating practice was to require long absences from the villages of adult males, the traditional food providers. Otter hunting parties were often taken on distant journeys (including forays as far away as the coast of California), leaving those at home to live in near-starvation. Sickness and poor nutrition helped to reduce the Koniag population on Kodiak from about nine thousand in 1784 to approximately three thousand at mid-19th century. Tanaina and Chugach Natives, though not entrapped in such an elaborate system of servitude, nonetheless found themselves victims of an exploitative Russian-controlled economic system.<sup>18</sup>

Other factors contributed to the general weakening of Native cultures. A particularly devastating smallpox epidemic in 1836–40 claimed many lives. Inter-marriage between Natives and Russian residents reduced the significance of cultural identities. Alcoholism became widespread among Natives. When the Russian Orthodox church sent missionaries, beginning in 1805, the introduction of a new set of beliefs and customs supplanted traditional ways.<sup>19</sup>

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15. The term “western Alaska,” used generally to refer to lands and waters outside Prince William Sound affected by the spill, did not always refer to the same area, or to any area with precise boundaries. Some used it interchangeably with “western Gulf of Alaska” or “Gulf of Alaska,” for example. To the Coast Guard, it did, originally at least, refer to the area of jurisdiction of the western Alaska captain of the port, who was Captain Rene Roussel at the time the spill occurred. The “WAK” designation frequently found in official correspondence in theory referred to this area, which is precisely defined in the Coast Guard captain of the port regulations (33 CFR, sec. 3.85-15). The incident command post “sectors” established later for Homer, Seward, and Kodiak did not conform precisely to these jurisdictional boundaries, however.

16. D. W. Clark, “Pacific Eskimo: Historical Ethnography,” in *Handbook of North American Indians*, ed. D. Damas, vol. 5 (Washington, D.C.: Smithsonian Institution, 1984), 191.

17. C. M. Mobley et al., *The 1989 Exxon Valdez Cultural Resource Program* (Anchorage: Exxon Shipping Co. and Exxon Co. USA, 1990), 51.

18. Clark, 187.

19. Mobley et al., 52.

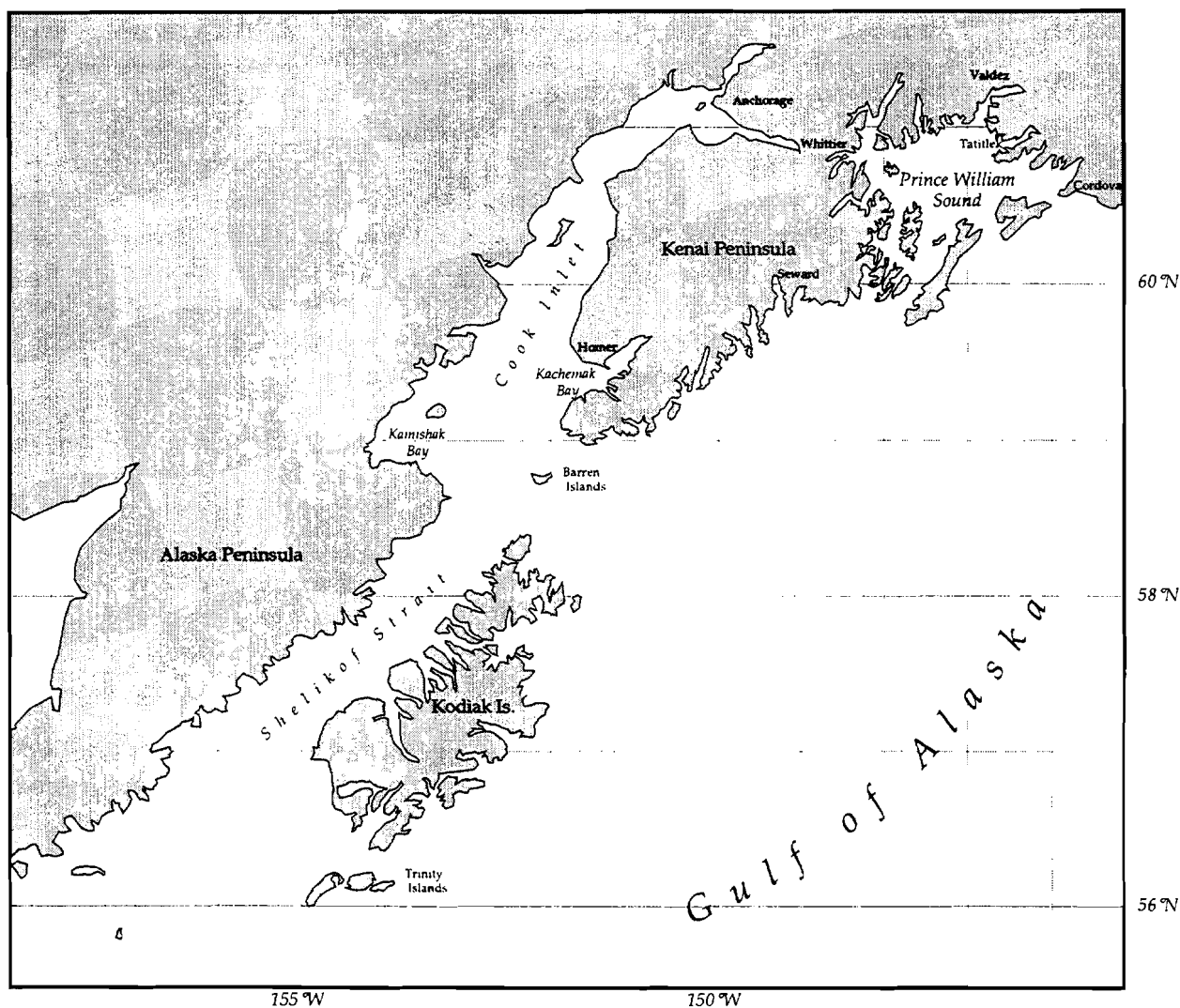


Figure 1.3. The region affected by the *Exxon Valdez* oil spill.

At mid-century, perhaps realizing that the supply of sea otter pelts was finite, Russia sought to diversify the local economy. Experiments in agriculture, fishing, mining, and fur farming were attempted. A rather productive coal mine, located near Port Graham Bay, flourished for a dozen years, finally closing in 1862. Gold and copper mining were attempted, but met with little success.<sup>20</sup>

In 1867, Russia, needing money and no longer seeing Alaska as a profitable venture, sold the lands to the United States. Instead of leading Alaska to a new prosperity, however, the years that followed brought intensified market competition for furs, leading to overhunting and eventual collapse of the fur trade. The economy in the area began a gradual transformation, centered about commercial whaling, salmon fishing and canning, livestock production, and development of an ice industry.<sup>21</sup>

20. Ibid.

21. Ibid.

The changing economy further altered Native ways. The last masked hunting ceremonies (a very old Koniag tradition) were held in the 1870s. The acculturation process was at work. Natives were abandoning traditional languages, and in Koniag subterranean homes, such items as clocks, mirrors, glass windows, cookstoves, and manufactured furnishings were commonly seen. With the growth of commercial fishing, beginning in the 1880s, profound changes came to the Native communities. Competition in the labor market came from the Chinese, and later from Mexican, Japanese, Filipino, and Puerto Rican laborers. When Natives were employed in the fishing industry, they found themselves divorced from traditional subsistence fishing patterns, and they also were displaced from Native communities by the need to be physically near the centers of commercial fishing operations.<sup>22</sup>

Salmon fishing emerged as the most important economic activity in the Kodiak area during the first part of the twentieth century. Canneries introduced a wage economy for the first time, and the introduction of public schools brought other changes to the social structure of the area. At mid-century, a large influx of U.S. military activity and the introduction of crab fishing industries helped to bring changes as well. Residents of the Alaska Peninsula gravitated toward employment opportunities across the Shelikof Strait, at Kodiak. Although canning operations were active in the Bristol Bay and Chignik areas, they tended to be dependent upon Chinese laborers.<sup>23</sup>

The descendants of the traditional Natives are today concentrated in a number of villages in western Alaska (figure 1.4). Village economies rely on fishing, governmental employment, and timber harvesting. The villages are semiautonomous, with radio contact between other villages and towns, and "outside" visits for medical or pleasure purposes. Villages still rely on local fish and game to provide for the mixed cash and subsistence economies which are characteristic of the area.<sup>24</sup> The *Exxon Valdez* spill was viewed by many Native villagers as a threat to lifestyles which had been the result of an extended evolution. Natives who felt they had finally come to an independent existence with which they were fairly comfortable, found the threat they saw in this latest disruption particularly disturbing.

#### MINING, THE FUR TRADE, AND FISHING IN PRINCE WILLIAM SOUND

When the Klondike gold rush began in 1897, new life came to Prince William Sound. Valdez was promoted as an "all American" route for access to the Klondike gold fields, circumventing Canadian customs officials who were considered difficult to deal with. Reaching the Klondike via Valdez proved, however, to be an almost impossible task. Less than one percent of the thirty-five hundred adventurers who tried to make the journey from Valdez ever reached the Klondike. The more fortunate ones turned back to crowded refuge in Valdez. Many others perished en route.<sup>25</sup>

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22. Ibid., 53.

23. J. A. Hussey, *Embattled Katmai: A History of the Katmai National Monument* (San Francisco: National Park Service [NPS], Historic Resource Study of the Office of History and Historic Architecture, 1971), 425.

24. Mobley et al., 55.

25. P. Berton, *Klondike, The Last Great Gold Rush, 1896-1899*, rev. ed. (Toronto: McClelland and Stewart, 1972), 196-202. The "All American Route" was the product of promoters selling guidebooks to naive adventurers at ports such as Seattle. It was a highly impractical route, with nearly impassable trails. Many turned back when they encountered treacherous

Some of those who came to seek fortunes in the Klondike found themselves exploring the area near Valdez instead. Indeed, several significant strikes were made, producing substantial fortunes, and permitting extraction of gold (sporadically) through the 1960s. A wealth of copper was also found on several islands, and on the eastern shores of the sound. On Latouche Island, for example, mining supported a community of three thousand. The town had a hospital, a movie house, stores, warehouses, and a three-story bunkhouse.<sup>26</sup> After the mines closed in 1928, the town of Latouche was gradually abandoned. The Kennecott Copper Mines, 193 miles inland from Cordova, became fabulously productive sources of copper ore. With the help of Guggenheim and Morgan financing, the area flourished for nearly thirty years, during which it became the richest source of copper in the world.<sup>27</sup>

On 10 December 1910, the SS *Olympia*, a twenty-eight hundred ton vessel and one of a fleet of six steamers operated by the Alaska Steamship Company, encountered gale force winds and a blinding snowstorm, and while attempting to reach the safety of Valdez harbor, was blown off course, and went aground on Bligh Reef.<sup>28</sup> The crew and passengers were rescued (after seventeen hours on the reef), but the vessel was declared a total loss. The *Olympia* remained fast upon the reef, a landmark for sailors, for the next twelve years.

When fox-fur attire became popular, beginning around 1910, the sound was discovered to be an excellent location for the raising of foxes. As a result, by 1925 fox farms were found on as many as thirty-four islands in Prince William Sound. Foxes were fed on spawning salmon, wastes from canneries, and occasional whales which washed up on shore. (There were also suspicions that grain, allegedly being delivered as feed, was supporting another profitable cottage industry of the times, bootleg whiskey production.) Fox farming declined rapidly, however, when the Great Depression reduced markets for such luxuries as fox furs.<sup>29</sup>

Scattered operations for processing salmon were active in the sound as early as the late 1800s. By World War I, there was a large fish salting and canning industry within the area. During the decades of the twenties through the fifties, fishing thrived. Statehood (bringing heretofore absent regulation) and smaller salmon runs combined to diminish the significance of the fishing industry in Prince William Sound.<sup>30</sup>

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river rapids. Of those who managed to return to the "safety" of Valdez, many perished during the winter of 1898-99 due to dreadfully crowded conditions, lack of supplies, and scurvy.

26. F. Dyson, "Honeymoon in a Ghost Town," *Alaska Magazine* 36 (20 Jan. 1970): 12-13; and J. G. Leaf, "Return to Latouche," *Alaska Magazine* 43 (June 1977): 28-30. Both of these articles were written by former residents of Latouche, describing "what it was like" prior to the abandonment of the settlement.

27. Johannsen and Johannsen, 58. The "green young feller" was Stephen Birch.

28. L. McDonald, "Alaska Steam-A Pictorial History of the Alaska Steamship Company," *Alaska Geographic* 11, no. 4 (1984): 46-48.

29. J. Lethcoe and N. Lethcoe, *Cruising Guide to Prince William Sound*, volumes 1 and 2 (Valdez, Alaska: Prince William Sound Books, 1984-1985), 67. Lethcoe and Lethcoe report that during prohibition, several fox farmers "experimented with feeding their foxes grain," claiming they did "very well" on the large shipments which were being delivered.

30. Johannsen and Johannsen, 65.

## PRINCE WILLIAM SOUND AND WORLD WAR II

Bush pilot Merle "Mudhole" Smith sighted a Japanese submarine during his mail run to Knight Island in September 1941 (just three months prior to the bombing of Pearl Harbor), providing early evidence that the prospective enemy had a military interest in Alaska.<sup>31</sup> During World War II, Prince William Sound witnessed a surge of military activity. A complement of about one thousand troops were stationed in Valdez, principally for the purpose of moving supplies from ships in support of inland military operations, including the construction of the Alaska Highway. A larger outpost, housing as many as three thousand personnel, was built in Whittier. Whittier became an important supply center, and to facilitate the inland movement of its wares, a railway tunnel was constructed (one of the world's longest, at the time) to provide access to the main line of the Alaska Railroad.<sup>32</sup>

The end of the war brought demobilization of the Prince William Sound bases, and the area gradually lapsed into what one historian termed "a quiet backwater" period.<sup>33</sup> In 1954, after fifty-nine years of providing passenger service, the Alaska Steamship Line terminated its Prince William Sound routes. The final passenger voyage was an emotional experience for many Prince William Sound residents, as it was considered the end of a long-standing way of life.<sup>34</sup>

## PRINCE WILLIAM SOUND IN THE MODERN ERA

On Good Friday, 27 March 1964, Prince William Sound was jolted by a massive earthquake registering 8.6 on the Richter Scale. The destruction was profound. In Valdez, thirty-one lives were lost, and the town was substantially destroyed. It was subsequently relocated four miles away, as the land it had rested upon dropped to a near sea-level elevation. The village of Chenega lost twenty-three lives, most of them children, the result of a large tsunami (seismic seawave) which swept away nearly all of the buildings in the community. It too was relocated. A total of seventy-five persons lost their lives in Prince William Sound communities as a result of the quake.<sup>35</sup>

The major oil discovery made at Prudhoe Bay in 1968 precipitated a substantial debate over the construction of a pipeline to transport the oil to petroleum refining centers in the lower 48. A trans-Canada route could connect with a midwestern market, but at the price of granting a measure of control to a foreign nation. The alternative "all-American" route featured a pipeline to Valdez, serviced by a sea-going tanker fleet. Environmentalists and fishermen argued against the pipeline and against this reliance on ocean transport, while pro-development forces spoke to the economic benefits that would accrue if the pipeline project were approved. Finally, in 1973, Vice President Spiro Agnew, just weeks before resigning from office, registered the tie-breaking vote in

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31. L. E. Janson, *Mudhole Smith, Alaska Flier* (Anchorage: Alaska Northwest Publishing Company, 1981), 86-87.

32. S. Cohen, *The Forgotten War, A Pictorial History of WW II in Alaska and Northwest Canada* (Missoula, Mont.: Pictorial History Publishing Company, 1988), 66.

33. Van Hyning, 12.

34. McDonald, 115. McDonald wrote that the day was "like a funeral" in the Valdez community.

35. M. Landis, "Impact of the Earthquake on Health and Mortality," in *The Great Alaska Earthquake of 1964* (Washington, D.C.: The National Academy of Sciences, 1970), 78. Landis reported that 83 percent of all fatalities related to the quake were drownings.

the U.S. Senate, and the Trans-Alaska Pipeline, with its terminus in Valdez, was chosen as the transport mode for North Slope crude oil.

Construction of the pipeline brought another “boom” to Valdez during the mid-1970s. With construction completed in 1977, the first oil reached Valdez at 2302 on 28 July 1977. By 1 August, the first tank vessel (the *Arco Juneau*) had been loaded, and a new era had begun. The Coast Guard, recognizing the challenges which were presented by the volume of traffic at the new terminal port, opened a Marine Safety Office (MSO) at Valdez. The new MSO was commissioned on 1 July 1977. In addition, major improvements were made in radio communications, vessel tracking capabilities, and navigational aids. The National Oceanic and Atmospheric Administration (NOAA) recharted the tanker routes, an especially important task since the 1964 earthquake had rearranged the subsurface in many areas of Prince William Sound.<sup>36</sup>

Prince William Sound’s 1989 population was approximately five to six thousand, of whom about one thousand were Natives. Valdez, Cordova, Whittier, and the Native villages of Tatitlek and Chenega Bay are the present-day established communities within the sound. The remaining population is widely scattered. Except for Valdez, which has highway, ship, and aircraft facilities, these communities have very limited access. There are no roads to Whittier, Cordova, Chenega Bay, or Tatitlek (figure 1.4). Other than Valdez, these communities could not accommodate more than a handful of those who arrived in the rush of activity which followed the grounding of the *Exxon Valdez*.

#### WESTERN ALASKA IN THE MODERN ERA

The spill-affected area of western Alaska is today a center for major commercial fisheries and fish processing facilities. Overall, the area produces around a quarter of the total Alaskan salmon harvest and processes an even greater percentage. The city of Kodiak serves as a center for the support of a large, diversified, and wide ranging fishing fleet. The city also plays a significant role in the processing of fisheries products. The near complete closure of the 1989 salmon fishery in the Kodiak area had a profound impact on the fishing fleet, the processing plants, and the people and companies that service them.

In addition to the fishing fleet and fish processing facilities, Kodiak is home to the Coast Guard’s largest base (in area) and largest air station in terms of number of aircraft. The Coast Guard and the local city and borough governments enjoyed a long and well established working relationship that served well during the oil spill response.

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36. Lethcoe and Lethcoe, 86.



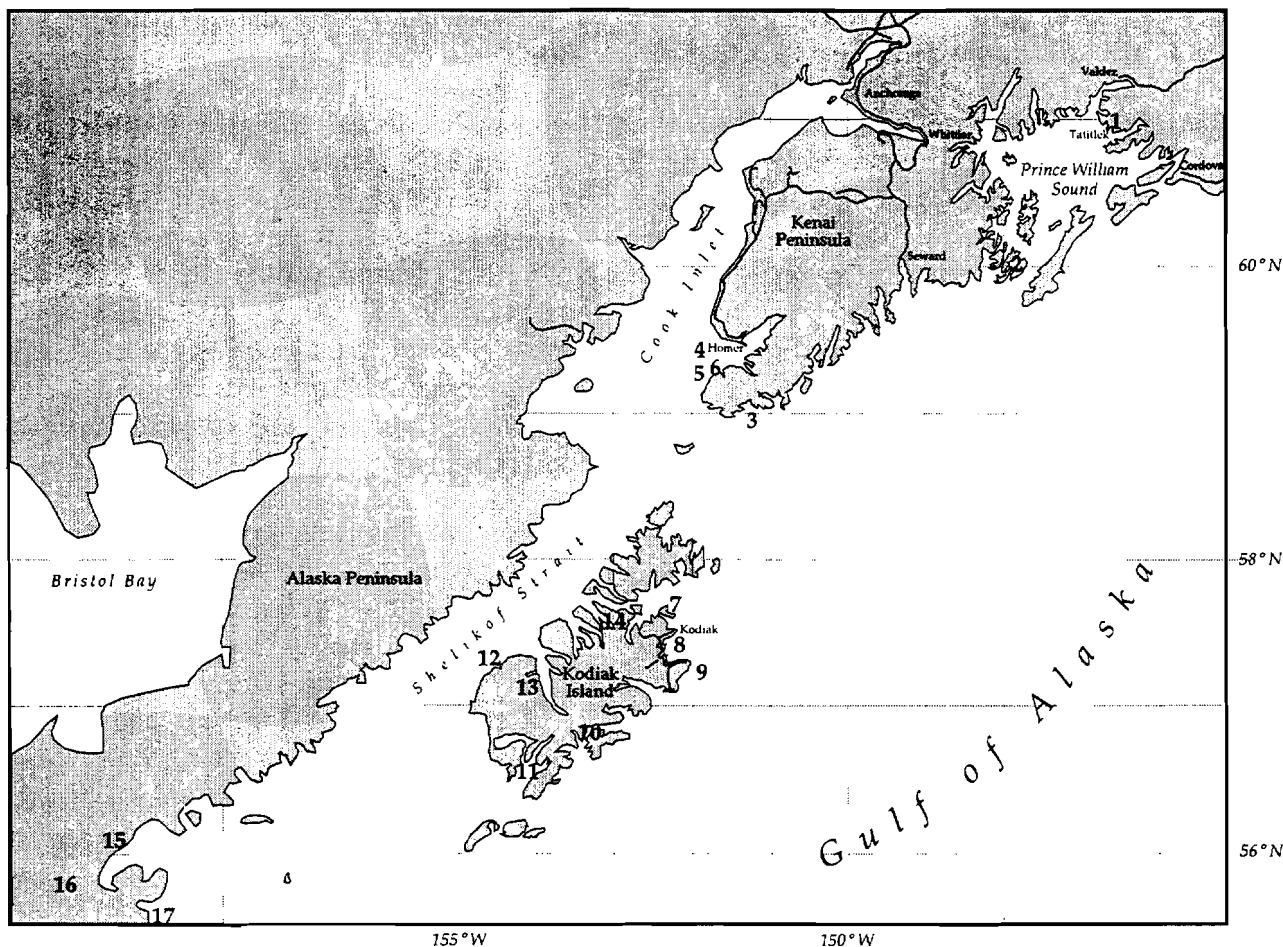


Figure 1.4. Major roads and Native Alaskan villages and fishing areas. The Native Alaskan sites shown are: (1) Tatitlek; (2) Chenega Bay; (3) Windy Bay; (4) English Bay; (5) Port Graham; (6) Kasitsna; (7) Ousinkie; (8) Kodiak; (9) Chiniak; (10) Old Harbor; (11) Akhiok; (12) Karluk; (13) Larsen Bay; (14) Pt. Lions; (15) Chignik Lagoon; (16) Chignik Lake; (17) Chignik.

Source: Chugach Alaska Corporations (map of "Native Corporation Land Holdings," Oct. 1988).

#### COAST GUARD MARINE SAFETY OFFICE, VALDEZ

During the twelve years between the opening in 1977 of MSO Valdez and the grounding of the *Exxon Valdez* in 1989, approximately eighty-seven hundred oil tanker transits had occurred in Prince William Sound. Only minor and manageable spills had occurred.<sup>37</sup> Perhaps the most anxious moments occurred on 5 February 1980, when an outbound tanker, the *Prince William Sound*, radioed from the vicinity of Johnstone Point that it had lost main power, and was drifting in gale force winds. Later the auxiliary power was also lost, rendering the vessel unable to drop a line to tugs that came to the scene. The *Prince William Sound* drifted without power for twenty-four hours, and was perhaps one hour from grounding on Glacier Island when the auxiliary power was restored. The vessel was able to return to Valdez for repairs.<sup>38</sup>

37. U.S. General Accounting Office, "Adequacy of Preparation and Response to the Exxon Valdez Oil Spill" (furnished to Congress by request, report no. GAO/RCED 90-44, Oct. 1989), 20.

38. Lethcoe and Lethcoe, 86.

Commander McCall, commanding officer of MSO Valdez at the time of the *Exxon Valdez* grounding, later observed that the Coast Guard's record during the 1977–1989 period had been good. The MSO operated the Prince William Sound Vessel Traffic Service (VTS), also established in 1977. "The system, as such, had been in place for almost twelve years," he reported in an interview. "All the bugs were worked out of it. The industry, the locals, the state, and the federal agencies knew how the whole place operated. There were very little surprises, up until March 24th, in anybody's mind as to what was going on," he said. "As far as oil spill response, every spill that had occurred for the past twelve years was obviously minor, or in the case of the *Thompson Pass*, medium in nature, and they were all cleaned up satisfactorily."<sup>39</sup>

By the standards of busy ports like New Orleans, vessel traffic problems at Valdez were minor. Except for specific provisions made in the Trans-Alaska Pipeline Authorization Act, the Port of Valdez would not have had a VTS, as it would not have qualified under the Ports and Waterways Safety Act, as amended.<sup>40</sup>

The areas affected by the spill thus had an abundant past, and preserving the remaining vestiges of its cultural heritage became a significant factor in the cleanup. Ancient settlements and burial grounds were archaeological resources which required special protection. Remnants of twentieth century activities, including abandoned fox farms, canneries, and mining operations, also had to be protected from disturbance by the thousands of workers who would be present on shorelines during the response.<sup>41</sup>

Except for the steady movement of oil tankers in and out of the Valdez terminal, and the sporadically busy fishing seasons, the sound was a relatively quiet place before the *Exxon Valdez* accident ("wet and wild, blue and green, beautiful and fascinating in the richness of its flora and fauna," in the words of one enthusiastic writer).<sup>42</sup> During the summer months, the sound is a popular destination for cruise ships and sightseeing aircraft. Prior to the *Exxon Valdez* spill, there remained a residue of discord between those supporting multiple-use development within the sound (built around the pipeline) and others, especially Cordova fishermen, who had been wary of the tanker presence since well before the opening of the pipeline.<sup>43</sup>

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39. Comdr. S. A. McCall, interview by Lt. Comdr. R. Gaunt, Anchorage, 21 Apr. 92, no. F672, tape, FOOSC Exxon Valdez Archive. The *Thompson Pass* had experienced a seventeen hundred barrel spill at the port of Valdez in January of 1989, but the oil was successfully boomed and recovered.

40. A. Van Emmerik (FOOSC staff), "Liabilities arising from the provision and operation of vessel traffic services," United States of America v. Exxon Corporation *et al.*, Civil Action no. A-91-082-CIV, U.S. District Court for the District of Alaska.

41. The matter of cultural resource protection is addressed elsewhere in this report. An excellent source is Mobley *et al.*, *The 1989 Exxon Valdez Cultural Resource Program* (this report was submitted by the Exxon Corporation, USA, in compliance with a U.S. Fish and Wildlife Service [FWS] Archaeological Resources Protection Act permit [1990]).

42. Van Hyning, 9.

43. T. Egan, "Fishermen Fear Spill Will Hurt Into the 90s," *The New York Times*, 29 Mar. 1989. Egan reported that fisherman had filed a suit, prior to the 1974, to "try to block construction of the oil terminus in the harbor of Valdez."

## CLIMATE, NATURAL HISTORY, AND CULTURE AS INFLUENCES ON THE RESPONSE

### SEA CONDITIONS

Southern Alaska is influenced by the Alaska Current, which enters Prince William Sound at its eastern entrance, moves in a northwesterly direction, then arcs generally southwest, eventually exiting the sound at the Montague Strait. There it rejoins the Alaska Coastal Current, which moves along the Kenai Peninsula, then to the Kodiak/Alaska Peninsula region (figure 1.5).<sup>44</sup> Floating oil was entrained in this current, with the leading edge exiting from Prince William Sound on 30 March, moving thence along the Kenai Peninsula and through the Shelikof Strait, ultimately to locations within the Kodiak Islands group, and along the Alaska Peninsula. The farthest point identified as being touched by oil from the *Exxon Valdez* was near Kupreanof Point, on the Alaska Peninsula, over seven hundred miles from Bligh Reef.<sup>45</sup>

Summer sea water temperatures are 55°F to 56°F within Prince William Sound, and about two degrees cooler in the area of Kodiak Island. In the winter months water temperatures in Prince William Sound drop to around 42°F, again about 2°F to 3°F colder in the western Gulf of Alaska.<sup>46</sup> Temperatures this cold meant that oil evaporation would be slower, and that shoreline washing with ambient water would be less effective than it might otherwise have been. In addition, the threat of hypothermia had to be taken into account as workers were deployed to shorelines.

Both Prince William Sound and the western Gulf of Alaska are often stormy, with high winds and substantial wave heights. Some Gulf of Alaska regions have been subjected to winds as high as eighty-seven knots, with extreme wave heights approaching ninety-eight feet.<sup>47</sup> The onset of strong winds and waves in late summer proved to be a limiting factor in the cleanup. Conversely, wave action during storms provided a great deal of assistance in the shoreline cleansing process, especially during the winter of 1989–90. But a spring storm with winds as high as 70 knots, which occurred on the fourth day after the spill, effectively ended any hope that the spill could be contained. The oil slick which had grown to cover an area of one hundred square miles in the spill's first three days, increased to about five hundred square miles in extent as a result of the storm.<sup>48</sup>

Within Prince William Sound there is an approximate twelve-foot diurnal range between highest high and lowest low tides, and in areas outside the sound the range is 8.5–14 feet.<sup>49</sup> Flood tides produce currents of 0.4–0.5 knots at both Hinchinbrook

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44. U.S. Dept. of Commerce and U.S. Dept. of the Interior, "Physical Oceanography," in *The Gulf of Alaska, Physical Environment and Biological Resources*, by R. K. Reed and J. D. Schumacher (Washington, D.C.: Alaska Office, Ocean Assessments Division, NOAA, 1987), 58.

45. Raven Maps and Images, "Alaska and the Oil Spill of 1989" (a 1:2,500,000 scale special issue map which became widely referred to during the spill response).

46. C. W. Hartman and P. R. Johnson, *Environmental Atlas of Alaska*, 2d ed. (Anchorage: University of Alaska, 1984), 35.

47. W. A. Brower, Jr. et al., *Climatic Atlas of the Outer Continental Shelf Waters and Coastal Regions of Alaska*, vol. 1 (Anchorage: Arctic Environmental Information and Data Center, Arctic Environmental Information and Data Center, 1977), 89.

48. D. Ollis, "Slick Solution for Oil Spills," *Nature* 358 (6 Aug. 1992): 453–54.

49. Brower, Jr., figure 6 (Tide Data), 13.

Entrance and Valdez Narrows, while ebb speeds are 0.8 knots and 0.2 knots, respectively, at the same locations.<sup>50</sup> Initially, these large tides were responsible for considerable "re-oiling" of treated shorelines. Throughout the cleanup, tides limited the windows during which workers could be present on shores. "Tidal pumping" often released subsurface oil, contributing to the re-oiling of already-treated areas. On the other hand, intertidal areas benefited from surface oil removal during flood tides.<sup>51</sup>

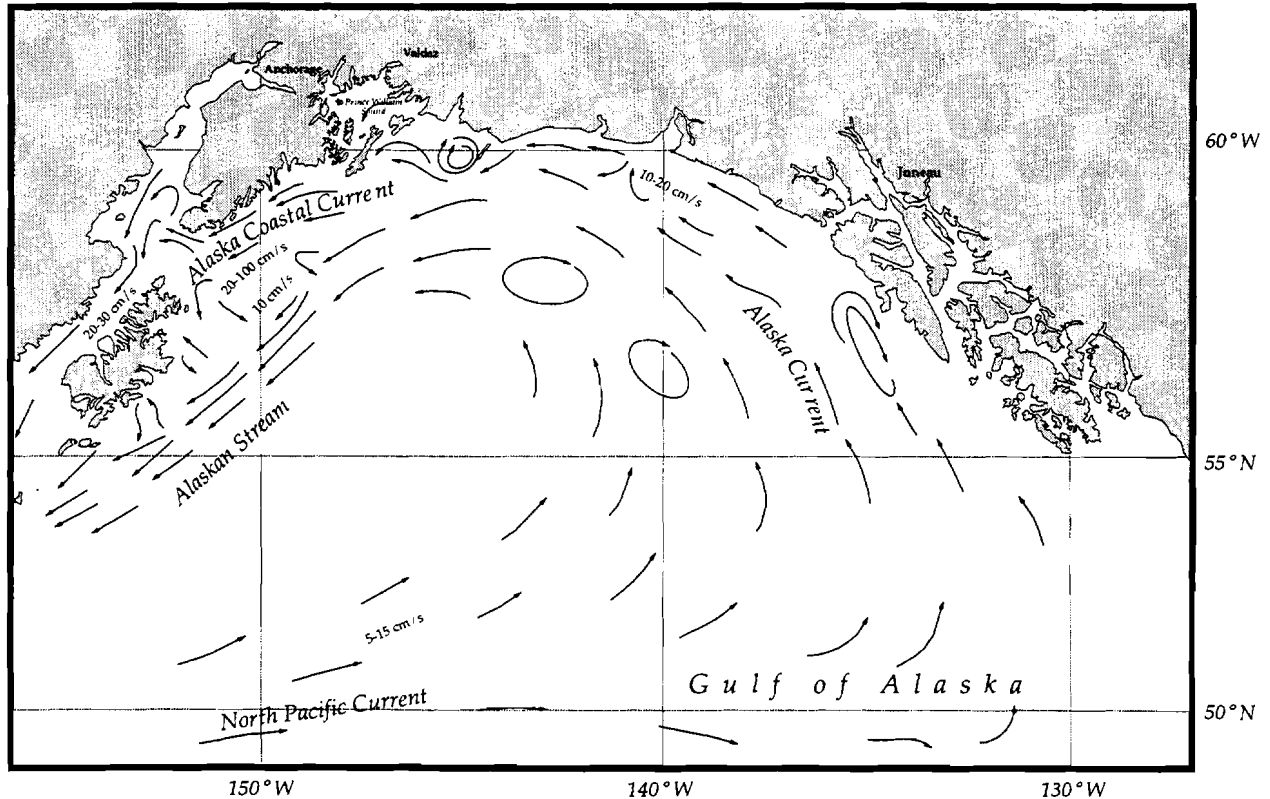


Figure 1.5. Schematic representation of the major currents in the Gulf of Alaska.

Source: D. W. Hood and S. T. Zimmerman, eds., "The Gulf of Alaska: Physical Environment and Biological Resources" (Minerals Management Service publication no. OCS study, MMS 86-0095, 1987).

## CLIMATE

The south-central coastal region of Alaska, which includes Prince William Sound, lies within a northern latitude maritime climate zone. Parts of Prince William Sound receive substantial rainfall, averaging as much as 240 inches per year. Rain falls 120–150 days per year. Both the frequency and totals are somewhat less in western Alaska.<sup>52</sup> The semipermanent "Aleutian low" pressure area in the north Pacific produces most of the precipitation, which occurs from late September through early March. Snowfall within Prince William Sound often nears three hundred inches per year; in 1971

50. Lethcoe and Lethcoe, 6.

51. H. O. Jahns et al., "Natural Cleaning of Shorelines Following the Exxon Valdez Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 167.

52. Hartman and Johnson, 63.

Latouche Island recorded thirty feet of snow on the ground.<sup>53</sup> Snow begins as early as September and may be observed as late as early May. While snow was not a great factor in the cleanup, it contributed, along with stormy seas, to the precluding of field operations during winter. The greatest amount of rainfall occurs during autumn and early winter, though strong low pressures zones begin to appear as early as August.<sup>54</sup> Rainfall is often heaviest near slopes or at the heads of the many bays found in the area.<sup>55</sup>

Most of the area is subject to violent, and sometimes deadly, storms during the winter months. In 1989, for example, high winds and heavy seas began to impair cleanup operations as early as the first of September, when gale force winds and heavy seas shut down operations temporarily. Cleanup operations were halted for the year in mid-September. Gale force winds, and even winds of hurricane force (over 75 mph) are frequent during the period between September and June. The occurrence of "williwaws," a phenomenon in which pressure builds up on one side of a mountain, then spills over to the other side with down-slope wind speeds approaching 100 mph, can quickly turn a picturesque bay into a violent maelstrom.<sup>56</sup>

Temperatures are moderate, given the northern latitudinal position of the area. January minimums average about 16°–20°F and in midsummer, minimums are in the 48°–50°F range, with maximums averaging 60°–65°F. Temperatures are very rarely below 0°F or above 75°F. High humidity with frequent overcast and fog characterize the maritime climate. July and August normally have 17–20 percent of days with fog and visibility of one-quarter mile or less.

#### THE DAYLIGHT CYCLE

The area impacted by the *Exxon Valdez* oil spill lies between 57° N and 61° N latitude. At the time of the grounding in late March, Prince William Sound was experiencing approximately fourteen hours of light (58 percent of total day length) per day. By mid-June, northern sectors of the response area had as many as twenty-two hours of daylight (91 percent of day length) available. This was of course helpful during the busiest months of the cleanup, since it permitted long work days. In the same locations, the daylight period is reduced to only eight hours (33 percent of day length) near the winter solstice (figure 1.6).<sup>57</sup>

#### WILDLIFE RESOURCES IN PRINCE WILLIAM SOUND

*Birds.* The sound is rich in a wide variety of wildlife, and thousands of seabirds congregate wherever food is abundant. Perhaps the most common seabird is the marbled murrelet, a small brownish bird which numbers in the hundreds of thousands. Other commonly seen seabirds are puffins, petrels, murres, auklets,

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53. Van Hyning, 14.

54. Mickelson, 16.

55. Lethcoe and Lethcoe, 5.

56. Van Hyning, 14.

57. Hartman and Johnson, 55. The figures include sunlight plus twilight periods which together make up the period during which outdoor activities can be carried on without artificial lighting.

kittiwakes, Arctic terns, and cormorants. Fish processing plants and spawning streams are an attraction for thousands of glaucous-winged and mew gulls. Harlequin ducks and black oyster catchers are less abundant, but nevertheless spectacular appearing members of the Prince William Sound bird population. A total of 224 bird species have been sighted there, of which 111 are water-related.<sup>58</sup>

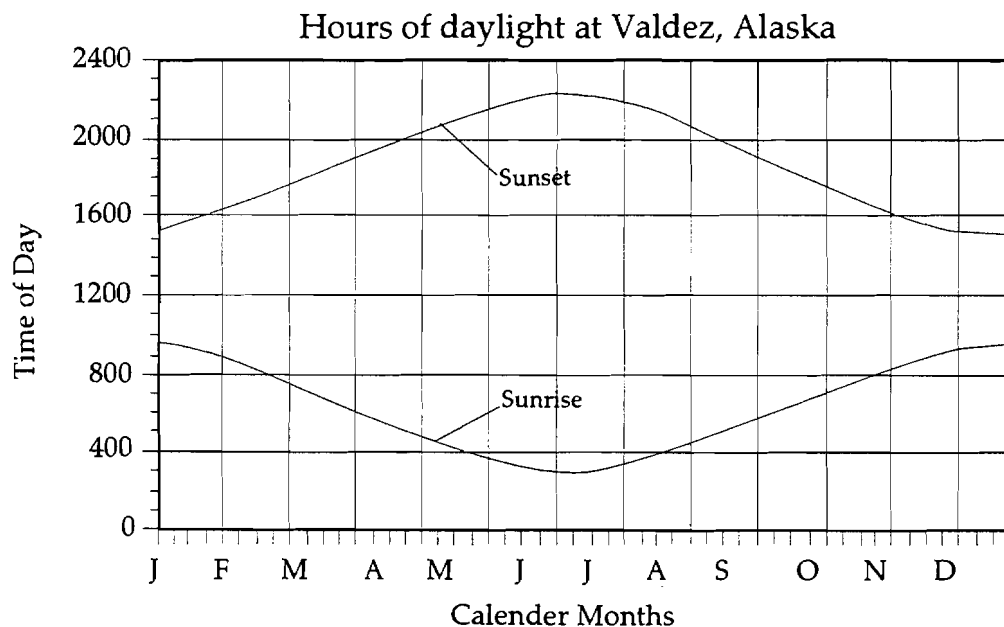


Figure 1.6. Yearly distribution of daylight hours in Valdez, Alaska.

Hawkins Cutoff and Hinchinbrook Entrance are major access points for birds on the Pacific Flyway. It has been estimated that the Copper River Delta, an area of four hundred square miles just east of the oil impact zone within Prince William Sound, hosts more than twenty million birds in late April and early May.<sup>59</sup> In late April, as many as five thousand pintails have been observed passing through Hawkins Cutoff during a single hour.<sup>60</sup>

Of the estimated Alaskan bald eagle population of 30,000 (20,000 adults and 10,000 fledglings), an estimated 2,200 reside in Prince William Sound.<sup>61</sup> Eagles were intensely studied and monitored during the spill response and a substantial amount of attention was dedicated to protecting the nests of the Prince William Sound eagle population (figure 1.7).

*Marine Mammals.* Marine mammals are also abundant. Orcas, or killer whales, are perhaps the most spectacular, and are a popular tourist attraction. Approximately 182 killer whales lived in Prince William Sound prior to the spill, dwelling within nine separate family units or "pods." Harbor and Dall's porpoises are often seen, and

58. Van Hyning, 24.

59. Ibid. Estimation by P. Isleib (Cordova ornithologist) and Dr. B. Kessel (University of Alaska zoologist).

60. Lethcoe and Lethcoe, 9.

61. United States of America v. Exxon Corporation *et al.*, U.S. District Court of Alaska, filed 8 Apr. 1991, Civil Action no. A91-082. See attachment, "Summary of Effects of the Exxon Valdez Oil Spill on Natural Resources and Archaeological Resources," 5.

humpback whales feed in Prince William Sound during summer months, while Pacific gray whales migrate through the Gulf of Alaska at the same time.<sup>62</sup> Sperm whales, though primarily a low latitude species, are sometimes seen in the Gulf of Alaska during summer months. Others which may inhabit Prince William Sound and/or the Gulf of Alaska at various times include beluga, humpback, minke, blue, sei, fin and northern right whales.<sup>63</sup>

Although lack of recent census data necessitates rough estimation, perhaps four thousand harbor seals were present in the sound at the time of the spill. Harbor seals tend to congregate on ice floes near glaciers, or on sand bars, to rest. In addition, Steller sea lion colonies are found in the sound.<sup>64</sup> Cleanup schedules in a number of areas were dictated by pupping season considerations.

Sea otters may have numbered as many as ten thousand in Prince William Sound, prior to the spill. Though once nearly eliminated by intensive fur hunting, small numbers survived and replenished the species. During the 1970s a program of trapping and relocating sea otters from the densely populated Montague Island colony to other areas was initiated.<sup>65</sup> Sea otters were particularly vulnerable to the effects of floating oil, and came to be regarded as victim-symbols of the spill, and the focal point of much media attention.

*Fish.* The waters of the sound support a number of fish species, and make possible a substantial annual seafood harvest. In addition to the natural breeding which takes place within hundreds of spawning streams and other breeding areas, a number of hatcheries are found. Pink salmon are perhaps the most significant species to the fishing community. A number of other species are also present with Pacific herring and red salmon being prominent in the commercial harvest. In addition, portions of the sound are used for crabbing and shrimping, and for oyster and mussel harvest. In fact, the recent resurgence of the sea otter population has come at the expense of the crab population, as adult sea otters can consume twelve to fourteen dungeness crabs per day when they are available.<sup>66</sup> Concerns for the future of commercial fishing and subsistence harvest within the areas affected by the spill were major considerations throughout much of the response.

*Terrestrial Mammals.* Nineteen species of terrestrial animals, including mink, river otters, brown and black bears, and deer, inhabit lands adjacent to spill impacted shorelines. Most of these species are dependent on coastal resources. It was feared initially that animals would fall victim to toxic vapors. An additional concern was that scavengers would ingest oil saturated bird, fish, and animal carcasses found on the shorelines. (Later studies of the effects on most of these species proved to be

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62. *Ibid.*, 6-7.

63. Mobley et al., 32.

64. *United States of America v. Exxon Corporation et al.*, filed 8 Apr. 1991. See page 6 of attachment. Steller sea lions are listed as an endangered species.

65. Johannsen and Johannsen, 95.

66. Mickelson, 137.

inconclusive, because of the difficulties of maintaining sustained contact with these elusive creatures.)<sup>67</sup>

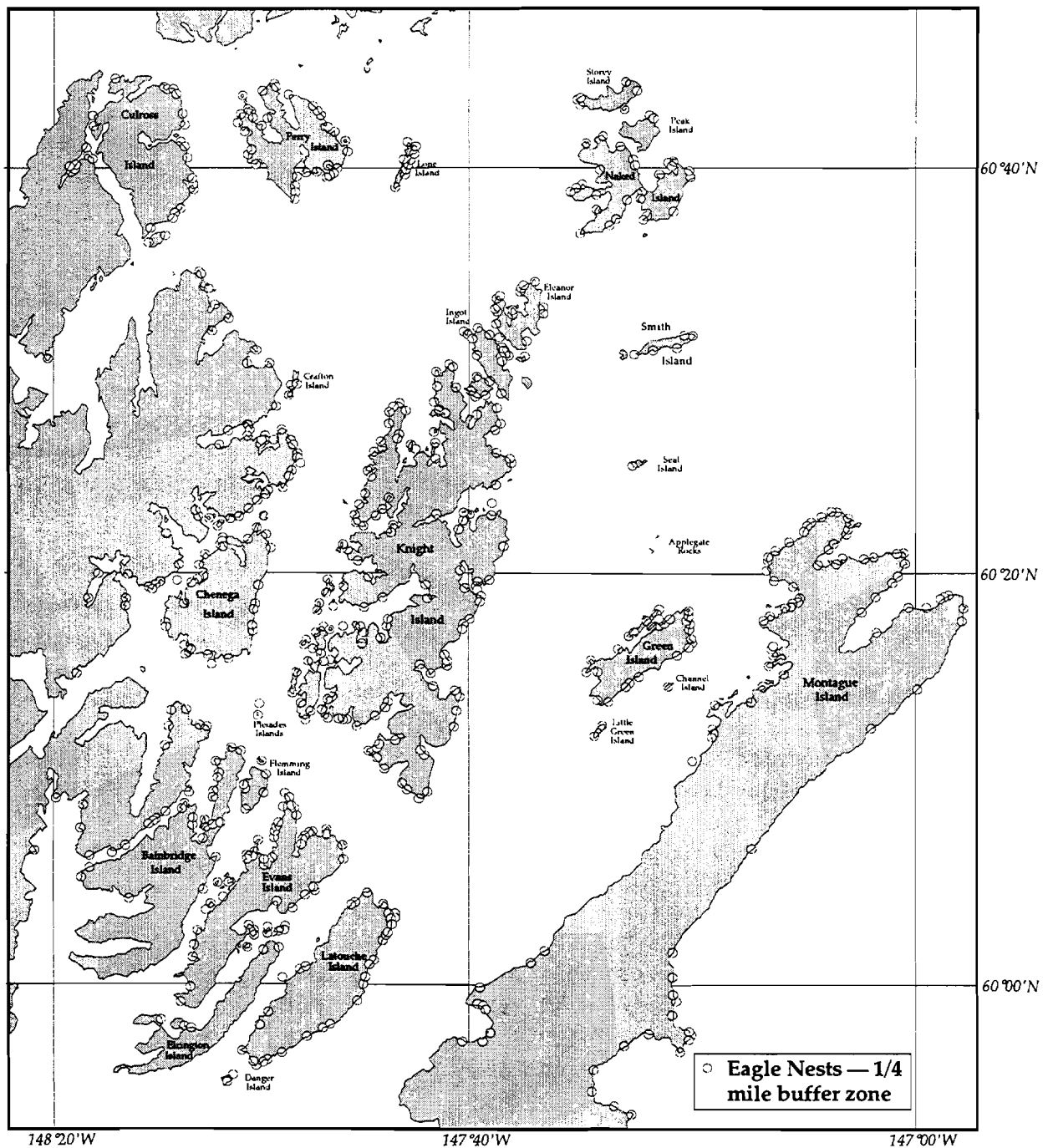


Figure 1.7. Prince William Sound eagle nest buffer zone map from 1992 FINSAP survey. Aircraft had to maintain at least 1,000 feet altitude if passing over any buffer zone.

Source: Reproduced with permission from Exxon Co., USA.

67. United States of America v. Exxon Corporation *et al.*, filed 8 Apr. 1991. See page 6 of attachment.



## LAND OWNERSHIP AND MANAGEMENT CONSIDERATIONS

The majority of the uplands affected by the spill are under the control of one of several federal government agencies. Most Prince William Sound lands are part of the Chugach National Forest, the nation's second largest, at 5,936,000 acres.<sup>68</sup> As the oil escaped the sound, and was influenced by the Alaskan Coastal Current, it moved along the shores of the Kenai Fjords National Park. As the oil flow passed the Cook Inlet, it contacted the mainland north of Shelikof Strait, part of the Katmai National Park and Katmai Preserve. South of the strait was Kodiak Island, and the nearby lands of the Kodiak National Wildlife Refuge.

Other significant land areas influenced (albeit only marginally) by the spill were the Alaska Peninsula National Wildlife Refuge and the Becharof National Wildlife Refuge, both on the Alaskan Peninsula, and the Aniakchak National Monument and Preserve, another component of the national parks network. The Alaska Maritime National Wildlife Refuge (used by about 75 percent of the state's migratory bird population, or between fifteen and thirty million birds) consists of a widespread collection of shorelines and islands (figure 1.8).<sup>69</sup> Added to those areas are a number of state parks, including the vast Kachemak Bay State Park, located near the southern tip of the Kenai Peninsula.<sup>70</sup> As a rough estimate, perhaps two-thirds of all the affected shorelines were under the management of state or federal authority.

Much of the remaining land is under the control of Native corporations. Under the Alaska Native Claims Settlement Act of 1971, Alaska's Eskimos, Indians, and Aleuts were awarded fee simple title to forty-four million acres of land, and \$962.5 million. In return, Native groups agreed to the extinguishment of aboriginal land claims. A result of the settlement was that thirteen regional, four urban, and two hundred local village corporations were formed, with Alaska Natives as shareholders.<sup>71</sup> Four of the larger corporations controlled lands within the area impacted by the spill.

Native lands within Prince William Sound are controlled by the Chugach Natives, Incorporated. The Chugach Alaska Corporation administers a 375,000 acre land settlement on behalf of about two thousand shareholders.<sup>72</sup> Chugach holdings, particularly on Latouche and Knight islands, were directly in the path of the oil as it moved from Bligh Reef, and were thus among the most heavily oiled shorelines. Chugach Alaska has lands of 27,671 acres on Latouche Island, 15,170 acres on Knight Island, and 14,389 acres in separate tracts at Montague Island.<sup>73</sup> Considerable nearby lands also affected by the spill are controlled by the Chenega Bay (village) Corporation.<sup>74</sup>

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68. Mobley et al., 88. The largest is Tongass National Forest, also in Alaska.

69. Mobley et al., 90.

70. Alaska Department of Natural Resources (ADNR), "Alaska's State Parks" (pamphlet released by ADNR to inform the public of activities and services available in Alaska State Parks, Jan 1991), no. F824, FOSSC Exxon Valdez Archive.

71. W. G. Demmert and K. Crane, *Alaska Blue Book 1989-90*, 9th ed. (Juneau: Division of State Libraries and Archives, 1989), 313.

72. Mobley et al., 91.

73. Chugach Alaska Corporation, "Native Corporation Land Holdings," Oct. 1988, map no. 00199, Oil Spill Public Information Center, Anchorage.

74. Mobley et al., 92. Native Claims Settlement lands are administered by both regional and village corporations. Besides Chenega Bay, the English Bay and Port Graham village corporations also had lands oiled by the spill. The Tatitlek and

As subsistence food users, as participants in the cleanup, and as the people whose lives were perhaps the most impacted by the spill, Chugach Natives, particularly the residents of the village of Chenega Bay, emerged as especially poignant victims of the spill in the news media.

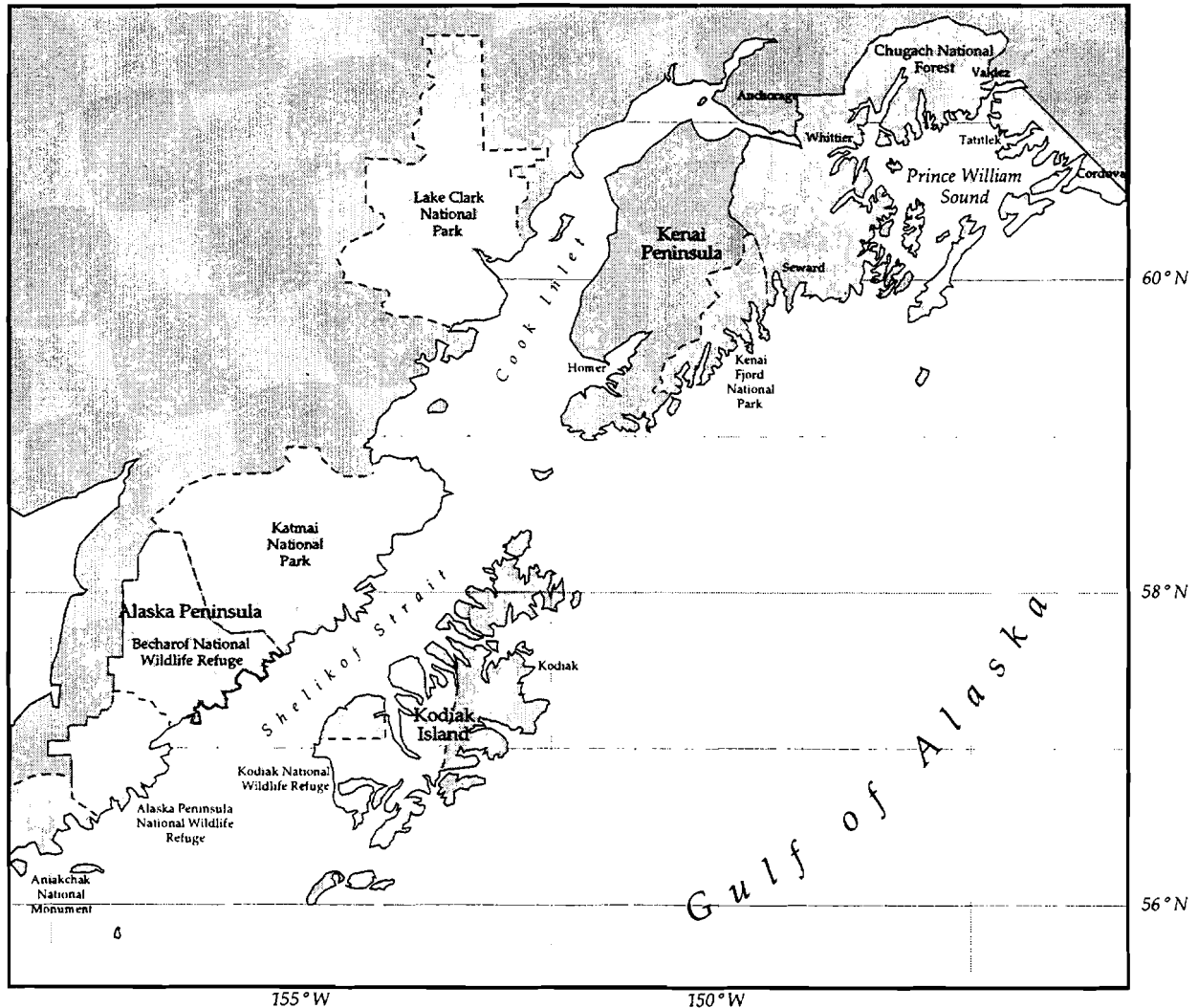


Figure 1.8. National parks, forests, and wildlife refuges in the area affected by the Exxon Valdez oil spill.

Four other Native regional corporations are found within the greater spill response area, including the Cook Inlet Region, Incorporated (with territory in the inlet, including most of the area north of the tip of the Kenai Peninsula); the Bristol Bay Corporation (Alaskan Peninsula, across the Shelikof Strait from Kodiak Island); Koniag, Incorporated (lands on and near Kodiak Island, and some territory on the Alaskan Peninsula); and the Aleut Corporation (lower Alaskan Peninsula and nearby islands). No shoreline cleanup assessment team (SCAT) work was done in the Aleut

Eyak corporations, though affected economically, did not experience direct oiling of their lands. Counting Native land ownership can sometimes be problematic, as intended land conveyances have not actually been made in all cases.

and Cook Inlet regions, and that done in Bristol Bay was entirely upon state or federal lands.<sup>75</sup>

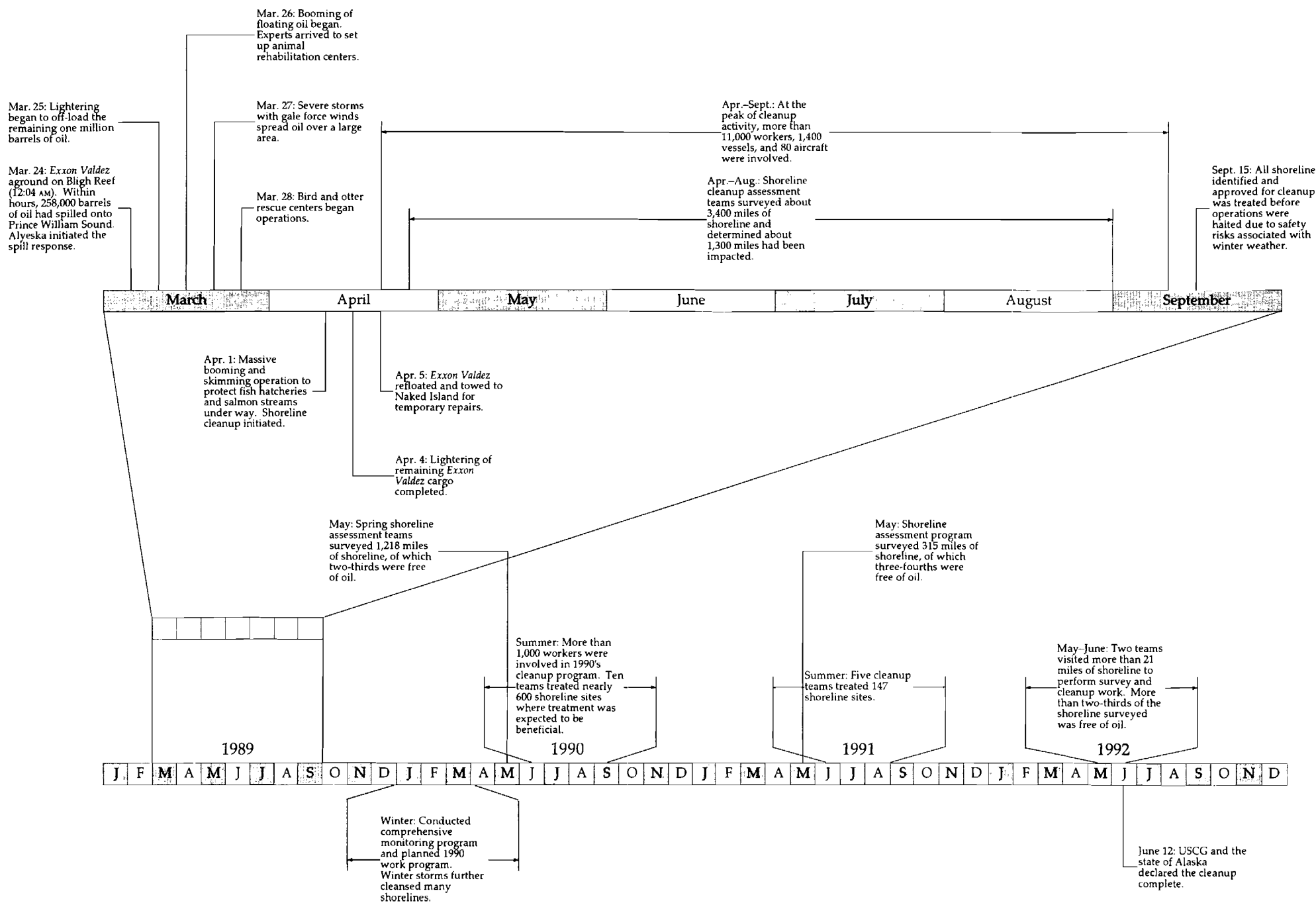
Besides the federal and state government and Native lands, there are scattered small private party holdings in the area. (But only 1.4 percent of all lands in the state of Alaska are privately held.)<sup>76</sup> In carrying out the cleanup, therefore, it was necessary to involve this network of land owners, managers and trustees, initially through the shoreline cleanup committees, and later through the Technical Advisory Group (TAG) decision making process. Particularly vexing for the Federal On Scene Coordinator (FOSC) were situations in which there was multiple, or conflicting land ownership. In some cases, the National Park Service controlled uplands while the Chugach Alaska Corporation controlled the intertidal zone. In many cases Alaska Department of Natural Resources (ADNR) controlled subtidal or intertidal lands. In other areas, ADNR's ownership of intertidal lands is contested by federal agencies.<sup>77</sup>

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75. Mobley et al., 92.

76. Demmert and Crane, 299. Figures for the main landholders are: federal government, including military, 58.9 percent; state holdings, 28.5 percent; and Native corporations, 11.9 percent. Interestingly the Gates of the Arctic National Park alone exceeds, by over 50 percent, the amount of privately held land in the entire state.

77. R. Betts et al., *Site Protection and Oil Spill Treatment at SEL-188: An Archaeological Site in Kenai Fjords National Park, Alaska* (Anchorage: Exxon Shipping Co. and Exxon Co. USA, 1991). Report submitted by Exxon Shipping Corporation et al, pursuant to DNR land use permit ARO-9845-9500-008 and NPS ARPA permit 89-Kenai Fjords-ARO-001.





## CHAPTER 2. VESSEL STABILIZATION, LIGHTERING, AND SALVAGE

### OVERVIEW

This chapter addresses the efforts to remove the oil remaining in the grounded *Exxon Valdez* without further destabilizing it, and then to raise and remove the vessel itself. Forty-four million gallons of oil were successfully contained within the ship and then successfully offloaded before the vessel was moved for repair.

Even though eleven million gallons of crude oil had been released, the *Exxon Valdez* still contained over 80 percent of its cargo, threatening to magnify an already overwhelming catastrophe as much as fivefold. The vessel was heavily damaged, open to the sea, unstable, and on the verge of breaking up. It lay hogged on Bligh Reef, hull girder over-stressed, and exposed to potentially violent weather. Handling oil is inherently hazardous, even under controlled conditions. The barely controllable conditions of salvage entail significant hazards of instability, explosion, and toxic exposure, and the people responsible for salvaging the *Exxon Valdez* were very much in harm's way.

The success of lightering and salvage efforts, which went forward largely out of the limelight, is one of the least appreciated aspects of the *Exxon Valdez* response. The movement of the vessel to Naked Island for emergency repairs engendered considerable state and public concern, however, which was reflected in the contingency planning for that event.

### COTP/FOSC ACTIONS TO CLOSE THE PORT OF VALDEZ

Upon learning of the *Exxon Valdez* grounding, The captain of the port's (COTP)<sup>1</sup> first concern was to stabilize the situation as quickly as possible. The *Exxon Valdez* was not reported aground and discharging oil until 0028, 24 March, twenty-four minutes after the fact.<sup>2</sup> Two minutes later, at 0030, the COTP closed the port of Valdez to all traffic, and kept it closed as long as weather left the discharged oil pool discrete and attackable.<sup>3</sup> On the night of 27 March, a storm with winds gusting to seventy knots broke up the slick and drove it from the traffic lanes.<sup>4</sup> Accordingly, the COTP reopened Valdez to tanker traffic on the morning of 28 March, with requirements for two-tug escort, state and federal pilotage, and Coast Guard monitoring.<sup>5</sup> It was opened to all traffic at 1400,

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1. The captain of the port is responsible for port security. At Valdez, Comdr. S. McCall, was COTP, commanding officer, Marine Safety Office (MSO), officer in charge marine inspection (OCMI), and the predesignated Federal On Scene Coordinator (FOSC).

2. USCG Pollution Report P 241446Z March 1989 (PWS Polrep 1), sec. (1)(A). All references in this chapter are to MSO Valdez USCG Pollution Reports (Polreps). No reference will be made to MSO Anchorage USCG pollution reports.

3. Ibid., sec. (2)(A); and Comdr. S. McCall, interview by Lt. Comdr. R. Gaunt and BM1 R. Travis, Anchorage, 21 Apr. 1992, no. F672, tape, FOSC Exxon Valdez Archive.

4. USCG Pollution Report O 280821Z March 1989 (PWS Polrep 9), sec. (2)(C); McCall, interview, 21 Apr. 1992.

5. USCG Pollution Report O 280821Z March 1989 (PWS Polrep 9), sec. (3)(A); and Cutter Information Corporation, "Spill Economics," *Oil Spill Intelligence Report* 12 (3 Apr. 1989): 5.

28 March.<sup>6</sup> Tanker traffic, both inbound and outbound, was restricted to daylight. Two escorting tugs were required to and from Bligh Reef, and the one-way zone was extended to Bligh Reef.<sup>7</sup>

The pressure upon the Federal On Scene Coordinator (FOSC) to reopen Valdez was both prompt and intense, and both political and physical. To take the latter point first, the Trans-Alaska Pipeline in reality cannot be turned off. When the port was closed, two tankers were at berth.<sup>8</sup> Three inbound Exxon tankers had diverted to lighter the *Exxon Valdez* and all other inbound tankers went to the Knowles Head anchorage, where by 28 March more than ten lay.<sup>9</sup> Pipeline throughput is balanced against tanker capacity. Without tankers to load, Alyeska reduced pipeline flow from 2 million barrels per day to 1.2 million.<sup>10</sup> At that reduced flow, the Alyeska marine terminal storage capacity of 7 million barrels, available on the morning of 25 March, had fallen to 5.6 million barrels by the evening of the 26th.<sup>11</sup> The reopening of the port on the 28th was thus surely welcome.<sup>12</sup>

In the judgment of the COTP/FOSC, the port had indeed required closure. In hindsight, Commander McCall felt he would not have reopened when he did, but he also recognized that he would probably be forced by political factors to do so.<sup>13</sup> North Slope fields, in 1988, provided about 25 percent of the national oil production and about 12 percent of national oil consumption.<sup>14</sup> The U.S. Department of Energy and the industry, including ARCO and others, pressed the FOSC to open the port.<sup>15</sup> Their arguments reflected overriding concern for what effect continued port closure might have on oil prices.<sup>16</sup> Having reopened the port, the COTP/FOSC established a one thousand yard safety zone around the *Exxon Valdez* and a five hundred yard avoidance zone around cleanup operations.<sup>17</sup>

## VESSEL STABILITY

Vessel stability and hull stress were serious concerns from the outset. By 0030, the *Exxon Valdez's* chief mate had ascertained that all center and starboard cargo tanks were rapidly discharging, two starboard ballast tanks (that had been empty) were filling, and that 115,000 barrels of cargo had already been lost. He calculated that stability was adequate, but that hull stresses exceeded acceptable limits, so he recommended against

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6. USCG Pollution Report O 282308Z March 1989 (PWS Polrep 10), sec. (2)(I).

7. USCG Pollution Report O 032248Z April 1989 (PWS Polrep 22), sec. (1)(I).

8. *Ibid.*

9. Cutter Information Corporation, "Spill Economics," 5.

10. *Ibid.* See lower rates reported in USCG Pollution Report P 251825Z March 1989 (PWS Polrep 4), sec. (2)(E); and USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (1)(C).

11. USCG Pollution Report P 251825Z March 1989 (PWS Polrep 4), sec. (2)(E); and USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (1)(C).

12. By morning of 3 April, fourteen tankers had loaded and left, three were loading, and three were at anchor (USCG Pollution Report O 032248Z April 89 [PWS Polrep 22], sec. [1](I)).

13. McCall, interview, 21 Apr. 1992.

14. S. Skinner (DOT), and W. K. Reilly (EPA), "The Exxon Valdez Oil Spill: A Report to the President" (prepared by the National Response Team, May 1989), no. C1388, FOSC Exxon Valdez Archive, 29.

15. McCall, interview, 21 Apr. 1992; and Comdr. S. McCall, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, Lt. T. Staats, and Lt. Comdr. H. Young, Anchorage, 29 July 1991, no. F111, tape, FOSC Exxon Valdez Archive.

16. Skinner and Reilly, 29-30; Cutter Information Corporation, "Spill Economics," 5. No long-term and little short-term consequence came of a brief rise in West Coast spot crude prices.

17. USCG Pollution Report O 282308Z March 1989 (PWS Polrep 10), sec. (2)(I).

moving the ship.<sup>18</sup> Further calculations done between 0030 and 0100 showed that stability had become marginal and confirmed unacceptable hull stresses. Doubtless the rapid cargo loss seen at 0030 produced the stability deterioration. By 0600, another 100,000 barrels, for a total of 215,000 barrels, had been lost.<sup>19</sup>

The chief mate had twice advised the master that the ship was not stable to move by 0100. Nevertheless, the master had restarted the engine at 0035.<sup>20</sup> During a radio transmission begun by the COTP at 0107, the master stated that, "We are working our way off the reef," although this was not happening and, as was now becoming apparent, impossible. "We are in pretty good shape right now stability wise," he reported.<sup>21</sup>

In truth, the vessel had come to rest in a very unstable position.<sup>22</sup> Even so, "rest" is not altogether apt. The wreck was impaled on reef rock and could not move ahead or astern. Nevertheless it was dangerously lively. It was free to capsize or float off,<sup>23</sup> and to swing about on its rock pivot.<sup>24</sup> The destruction of stability caused by the rapid discharge of cargo was considerable.

## LIGHTERING OPERATIONS

Before lightering operations could begin, the *Exxon Valdez* had survived one complete tidal cycle. The vessel neither refloated at the next high tide following grounding (occurring at 0206 on 24 March [+12.8 feet]), nor broke up at the 0821 low (-8.3 feet),<sup>25</sup> by which time the oil discharge was, for practical purposes, over.<sup>26</sup> But once lightering began, the chief fear was that the vessel would become too buoyant too soon, go adrift, and strike again with more bottom damage.<sup>27</sup>

The plan at first was to begin lightering at about 0630, 25 March, after an underwater survey.<sup>28</sup> After sounding the ship and lowering the starboard anchor to help maintain stability, the *Exxon Valdez* crew began to break out lightering hoses and couplings.<sup>29</sup> The inbound *Exxon Baton Rouge* was contacted at 0414 on 24 March, and estimated to arrive at 1100. Fenders and hoses were being readied at Alyeska Marine Terminal at 0500.<sup>30</sup> The *Exxon Baton Rouge* did arrive on scene at 1115 and began to rig fenders.<sup>31</sup>

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18. National Transportation Safety Board (NTSB), "Marine Accident Report: Grounding of the U.S. Tankship Exxon Valdez on Bligh Reef, Prince William Sound near Valdez, Alaska, March 24, 1989" (report no. NTSB/Mar-90/04, 31 July 1990), no. W1962, FOOSC Exxon Valdez Archive, 13.

19. Ibid., 27.

20. Ibid., 13. For over an hour from 0036 to 0141, under various rudder commands and ahead bells, the master swung the vessel repeatedly on the reef, until she finally settled on 280° at about 0152.

21. Ibid. At 0030, the master had said to the chief mate, "Yes, we are definitely not leaving this area."

22. Skinner and Reilly, 3 and 12.

23. Ibid. "The Exxon Valdez was in danger of capsizing if it floated off the reef."

24. McCall, interview, 21 Apr. 1992. Because the vessel did not break up, we discuss stability alone. The event could as well have transpired otherwise, if the vessel had broken up. It was stressed beyond design limits. The hull girder was designed to work (flex) in varying seaways under varying loads, not to be held on a reef.

25. USCG Pollution Report P 241446Z March 1989 (PWS Polrep 1), sec. (2)(D). The next high was at 1433 (+11.4).

26. McCall, interview, 21 Apr. 1992.

27. Ibid.

28. USCG Pollution Report P 251009Z March 1989 (PWS Polrep 3), sec. (3)(A).

29. NTSB, 14.

30. USCG Pollution Report P 241446Z March 1989 (PWS Polrep 1), sections (2)(H) and (2)(I).

31. USCG Pollution Report O 250223Z March 1989 (PWS Polrep 2), sec. (2)(E).



The vessel was alongside the *Exxon Valdez* port-to-port at 2010, fast at 2154, with first hose rigged at 2215, and the second at 2338.<sup>32</sup>

Pumping began at 0736 on 25 March at ten thousand to twelve thousand barrels per hour, using the *Exxon Valdez*'s cargo transfer system. This was suspended at 0845 to evaluate the situation.<sup>33</sup> The situation was that the ship's stripping lines were damaged, and could not be used.<sup>34</sup> About eleven thousand barrels were transferred before stopping.<sup>35</sup>

Lightering did not resume until the Coast Guard's Pacific Area Strike Team (PST) restarted the task late on 25 March. The PST mobilized quickly, offloading some sixty thousand barrels before Exxon's pumping contractor mobilized.<sup>36</sup> Once fully gathered, at least twenty PST members were on scene at all times. Nearly all PST members participated, as well as some from the Atlantic Area Strike Team (AST).<sup>37</sup>

As lightering progressed at increasing rates, the wreck showed increasing signs of "life."<sup>38</sup> Lightering had begun in earnest shortly before midnight, 25 March, with the onset of PST activity.<sup>39</sup> On 27 March, with winds at thirty knots and gusting to forty knots, the wreck's heading shifted from 284° at 0010 to 293° at 1300.<sup>40</sup> Two tugs held the *Exxon Valdez* and the *Exxon Baton Rouge* in position until a storm abated on 28 March.<sup>41</sup> Winds gusted to seventy knots over the night of 27 March, but lightering continued.<sup>42</sup> At about 1130 on 30 March, the wreck became somewhat buoyant.<sup>43</sup> By 1 April, the wreck had become very unstable and all hands were put on alert. Lightering continued at diminishing rates until operations were halted at noon, 4 April.<sup>44</sup> With a six-hour window during which the vessel could float free, it floated somewhat sooner than expected. Commander McCall recalled that this caused consternation in some members of the press corps.<sup>45</sup>

Real control over the vessel would be difficult to achieve in the face of the heavy damage it had received. Eight of eleven cargo tanks, two ballast tanks, and the forepeak tank were known to be holed (figure 2.1). Although no port wing tanks were holed, several suffered bottom plating damage.<sup>46</sup> The engine room and pump room were not holed.<sup>47</sup> Accordingly, until deck openings used to lighter could be blanked off to press

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32. USCG Pollution Report P 251009Z March 1989 (PWS Polrep 3), sections (2)(J), (2)(L), (2)(N), and (2)(O).

33. USCG Pollution Report P 251825Z March 1989 (PWS Polrep 4), sections (2)(A), (2)(C), and (2)(F).

34. USCG Pollution Report P 260852Z March 1989 (PWS Polrep 5), sec. (1)(A).

35. *Ibid.*, sec. (2)(A) and (2)(H). It is not clear whether this figure includes the lost oil that disclosed the problem.

Apparently the second test of the ship's system, was negative, for the system was not used.

36. Comdr. G. Reiter, notes for review of PST speech, 16 Nov. 1989, slide 13, no. W117, FOSC Exxon Valdez Archive. (PST speech given 20 Nov. 1989.)

37. Skinner and Reilly, 15.

38. McCall, interview, 21 Apr. 1992.

39. USCG Pollution Report P 262200Z March 1989 (PWS Polrep 6), sec. (1)(B); and USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 12 Mar. 1990, no. W629, FOSC Exxon Valdez Archive, 1.

40. USCG Pollution Report O 280230Z March 1989 (PWS Polrep 8), sec. (1)(C).

41. *Ibid.*; USCG Pollution Report O 280821Z March 1989 (PWS Polrep 9), sec. (1)(A).

42. USCG Pollution Report O 280821Z March 1989 (PWS Polrep 9), sec. (2)(C).

43. USCG Pollution Report O 302253Z March 1989 (PWS Polrep 14), sec. (2)(E).

44. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 3-4.

45. McCall, interview, 21 Apr. 1992.

46. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (2)(H).

47. NTSB, 25.

up the tanks for refloating, the wreck was largely open to the sea, but also largely buoyant aft in the engine spaces. Stability could thus barely be maintained.

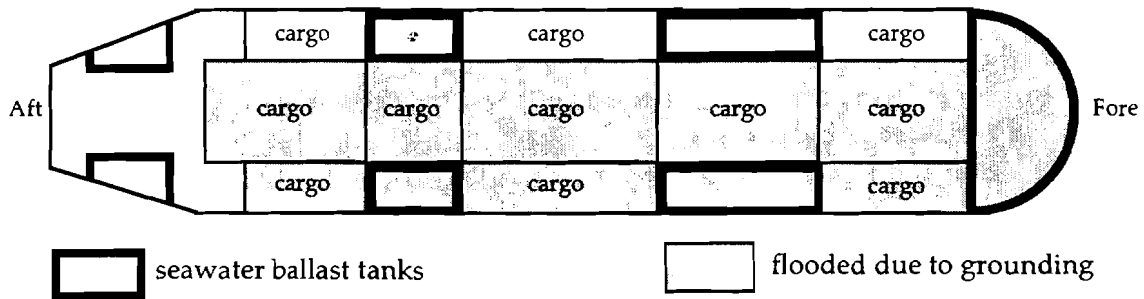


Figure 2.1. Diagram of the *Exxon Valdez* cargo and ballast tanks.

Source: S. Skinner (DOT) and W. K. Reilly (EPA), "The Exxon Valdez Oil Spill: A Report to the President" (prepared by the National Response Team, May 1989), no. C1388, FOSC Exxon Valdez Archive.

The full extent of damage was ultimately surveyed on dry dock in San Diego. The forepeak tank was severely holed, and center cargo tank numbers one through four were opened over almost their entire lengths. Center tank number five was damaged least. Starboard wing cargo tank numbers one, three, and five, and starboard wing ballast tank number two were severely holed. Starboard wing ballast tank number four had minor damage. There was extensive damage to internals and bulkheads between tanks.<sup>48</sup>

Tanker operations or accidents have occasionally produced devastating explosions.<sup>49</sup> In the *Exxon Valdez* grounding, explosion was as present a danger as instability, if somewhat more controllable. When the *Exxon Valdez* grounded, the inert gas system relief valves lifted, releasing both the inert gas blanket and crude oil vapors. Cargo vapors had entered the deckhouse by 0030, so strongly that the chief mate asked the master whether the general alarm should be sounded.<sup>50</sup> Because the engine room had remained intact, the inert gas could be replaced; but the vapors persisted. On the morning of 24 March, the air over the slick was heavy with a blue hydrocarbon haze.<sup>51</sup> The oil atmosphere was so rich as to cause severe headaches to those exposed. The risk of ignition from numerous helicopters landing on deck, vessels operating alongside, and work crews was constant; it was to an extent good fortune that conditions did not become right for an explosion.<sup>52</sup>

The risk of explosion did not disappear with the onset of lightering operations. Pumping with submersible pumps agitates tank contents, increasing the vaporization rate, and producing an explosive atmosphere. This added to the vapors already over the surrounding water, and with helicopter and other operations providing ignition

48. Ibid., 24–25.

49. Reiter, PST speech, slide 11. For example, T/V's *Puerto Rican*, *Sansinena*, *Chevron Hawaii*.

50. NTSB, 11–13.

51. A. Davidson, *In the Wake of the Exxon Valdez: The Devastating Impact of the Alaska Oil Spill* (San Francisco: Sierra Club Books, 1990), 26.

52. McCall, interview, 21 Apr. 1992. Lightering tankers, for example, provided a steel-on-steel spark source.

sources, made for a potentially critical situation.<sup>53</sup> To provide a measure of control, all pumping was through the *Exxon Valdez*'s manifold system, to reduce static discharge potential.<sup>54</sup>

When the early morning air testing on 28 March found three tanks to be borderline explosive, it was ordered that the inert gas system be maintained to all tanks, and that vapor reduction curtains be used around hoses at deck openings.<sup>55</sup> Cargo tanks were inerted two at a time throughout to keep internal atmospheres below explosive limits.<sup>56</sup>

When the *Exxon Valdez*'s fire and general alarms sounded at 0600 on 28 March, those aboard donned survival suits, and pumping was stopped until a damage control party determined that a galley alarm had sounded without apparent reason.<sup>57</sup>

#### THE PACIFIC AREA STRIKE TEAM

The FOSC had requested PST assistance at 0249, 24 March.<sup>58</sup> The PST began its recall, dispatched four members at 0630 and a C-130 to transport five more members and Air Deployable Anti Pollution Transfer Systems (ADAPTS) shortly thereafter.<sup>59</sup> The four-member party arrived in Cordova at 1820, for lack of a flight to Valdez. The C-130 landed at Anchorage. Both flew to Valdez at first light, arriving at 0920 and 1015, respectively, on 25 March. The first members were on board the *Exxon Valdez* at about 1310.<sup>60</sup> By 1900, two ADAPTS systems were being set up. Pumping into the *Exxon Baton Rouge* resumed under PST direction at about 2200, at a rate of about two thousand barrels per hour.<sup>61</sup> Although helicopter lifts were limited, by the end of 25 March, six members, two ADAPTS, and backup system parts were on board.<sup>62</sup> Because the *Exxon Valdez*'s stripping lines were damaged, all PST pumping had to be "over the top."

At 0530 on 26 March, five more team members arrived on board.<sup>63</sup> A third ADAPTS came on line, with all three running at maximum capacity. Four more ADAPTS were en route. Marine Pollution Control, Inc. (MPC), Exxon's pumping contractor, equipment began to arrive on board.<sup>64</sup> Approximately 46,256 barrels by 1700, and 51,064 barrels by 1900, had been pumped to the *Exxon Baton Rouge*.<sup>65</sup> At 0340 on 27 March, MPC started one pump and continued to set up others.<sup>66</sup> By 1900, with four pumps on

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53. Reiter, slide 13.

54. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 2.

55. Ibid.

56. USCG Pollution Report O 312354Z March 1989 (PWS Polrep 16), sec. (2)(C).

57. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989"; and USCG Pollution Report O 012320Z March 1989 (PWS Polrep 18), sec. (2)(B).

58. USCG Pollution Report P 241446Z March 1989 (PWS Polrep 1), sec. (2)(F).

59. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 1.

60. USCG Pollution Report P 251009Z March 1989 (PWS Polrep 3), sec. (2)(F); and USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 1.

61. Ibid.; and USCG Pollution Report P 262200Z March 1989 (PWS Polrep 6), sec. (1)(B).

62. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 1.

63. USCG Pollution Report P 262200Z March 1989 (PWS Polrep 6), sec. (2)(B).

64. Ibid., sec. (3)(A); and USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 1.

65. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sections (1)(A) and (2)(G).

66. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 2.

line, 124,299 barrels had been transferred.<sup>67</sup> Lightering continued twenty-four hours a day; PST members were on six hour watch-and-watch.<sup>68</sup> By the end of the day, MPC had three pumps on line.<sup>69</sup> At 1030 on 28 March, more PST members and equipment arrived at Valdez, with three pumps and two members to go on board.<sup>70</sup> MPC got a fourth pump on line; each new pump added one thousand barrels per hour capacity.<sup>71</sup> By the 29th, with seven pumps on line, over 390,000 barrels were reported lightered.<sup>72</sup> The *Exxon Baton Rouge* was completed and left at 2300 on 29 March, with 477,000 barrels on board.<sup>73</sup> Gaugers calculated that 668,000 barrels remained.<sup>74</sup>

The *Exxon San Francisco* went to Alyeska Marine Terminal on the evening of 29 March to discharge dirty ballast.<sup>75</sup> The vessel was alongside the *Exxon Valdez* at 1100 on 30 March.<sup>76</sup> At 1300 on 2 April the *Exxon San Francisco* had completed, with 452,533 barrels, and at 1630 was away, replaced promptly by the *Exxon Baytown* at 1800.<sup>77</sup> The stripping of an additional 94,652 barrels continued at 3,230 barrels per hour.<sup>78</sup> The *Baytown* completed and was away at 0920, 4 April, leaving 16,445 barrels on board the *Exxon Valdez*.<sup>79</sup>

When the *Exxon San Francisco* came along side at 1100 on 30 March, the PST's role began to shift. When pumping resumed at 1530, several hose couplings broke under pressure when valves were not opened in the *Exxon San Francisco*. Then, PST pumping was shifted to a dedicated riser, because different pumping pressures between MPC and PST pumps when using a common riser put back-pressure on the latter. The PST also recommended to Exxon that, with eight or nine MPC pumps on line, PST pumps would be better employed stripping tanks pumped out to the limits of earlier pumping. Pumping continued on 31 March at a rate of twelve thousand barrels per hour, although some time was lost in moving pumps as tanks were pumped down to limits.<sup>80</sup> A particular problem developed in pumping the forepeak, because access was too small for the MPC pump. A PST pump was used with a MPC prime mover, and the forepeak was completed by noon, 2 April.<sup>81</sup> Stripping continued on 2 April, with PST crews able to strip to less than six inches of oil on top. Salvors began to button the

67. USCG Pollution Report O 280821Z March 1989 (PWS Polrep 9), sec. (1)(B).

68. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (3)(A); and USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 1. Watch-and-watch is a term that refers to working hours on and working hours off.

69. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 2.

70. USCG Pollution Report O 282308Z March 1989 (PWS Polrep 10), sec. (2)(C).

71. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 2. But see USCG Pollution Report O 290920Z March 1989 (PWS Polrep 11), sec. (1)(E), noting that each pump had a different rate.

72. USCG Pollution Report O 292333Z March 1989 (PWS Polrep 12), sec. (1)(F).

73. USCG Pollution Report O 302253Z March 1989 (PWS Polrep 14), sec. (2)(C).

74. USCG Pollution Report O 310658Z March 1989 (PWS Polrep 15), sec. (1)(C).

75. USCG Pollution Report O 290920Z March 1989 (PWS Polrep 11), sec. (3)(A). ADEC would not allow discharge into Prince William Sound (USCG Pollution Report O 280230Z March 1989 [PWS Polrep 8], sec. [2](B)).

76. USCG Pollution Report O 302253Z March 1989 (PWS Polrep 14), sec. (2)(E).

77. USCG Pollution Report O 022300Z April 1989 (PWS Polrep 20), sec. (1)(A); and USCG Pollution Report O 030627Z April 1989 (PWS Polrep 21), sections (2)(J) and (2)(K).

78. USCG Pollution Report O 032248Z April 1989 (PWS Polrep 22), sec. (1)(C).

79. USCG Pollution Report O 050106Z April 1989 (PWS Polrep 24), sections (2)(F) and (1)(I).

80. *Ibid.*, sec. (2)(E); and USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 3.

81. USCG, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez 25 March to 4 April 1989," 4; USCG Pollution Report O 312354Z March 1989 (PWS Polrep 16), sec. (2)(C); and USCG Pollution Report O 010737Z April 1989 (PWS Polrep 17), sec. (2)(F).

ship up on 3 April. The PST completed tank top skimming operations at 0600 on 4 April, packed its gear, and left two ADAPTS on board; by 1630, 4 April, the last PST member had left the *Exxon Valdez*.<sup>82</sup>

In sum, the lightering operation went as rapidly as conditions allowed.<sup>83</sup> The Coast Guard, Exxon, and many contractors and experts worked under harsh and hazardous conditions, to complete a demanding job with maximum dispatch. Cooperation among the Coast Guard, Exxon crew, and contractors was extremely high. The job ended with the PST reporting that:

Cooperation between Exxon, Coast Guard, and contractors on board T/V *Exxon Valdez* during lightering operations was outstanding. Any requests for assistance or support were readily provided. The success of the lightering operation can be attributed to a total team effort.<sup>84</sup>

## SALVAGE

One priority decision was where to hold the ship, once raised, to prepare for tow. The initial analysis was that the vessel's sectional modulus was sufficient to permit it to stay intact once in transit.<sup>85</sup> The FOSC decided that it should not go into Valdez, but to an oiled area, probably Naked Island.<sup>86</sup> Outside Bay on Naked Island was designated.<sup>87</sup> A one thousand yard moving safety zone was centered on the *Exxon Valdez* at all times, to be enforced by Coast Guard vessels.<sup>88</sup> Plans were made final by 3 April.<sup>89</sup>

Instability and explosion dangers remained. The cargo tanks had to be purged and then pressurized with inert gas to about 2.5 pounds per square inch (psi), the maximum that the inert gas system could generate, with compressed air added as necessary to raise the ship. The nine thousand horsepower tug *Salvage Chief* arrived in Valdez on 3 April, two days ahead of her estimated time of arrival, to be followed the next day by the *Arctic Salvor*.<sup>90</sup> The FOSC, the Regional Response Team (RRT), and other agencies agreed to use dispersants should additional oil be released when the vessel was moved.<sup>91</sup> Dispersant-loaded aircraft were staged in Anchorage, if needed. Two Marco V skimmers and workboats were designated to move with the ship, and a vacuum truck was on board, as well as the PST pumps left behind.<sup>92</sup>

The vessel salvage plan provided for both skimming and booming back-up capability, as well as for possible dispersant use. The surface equipment to be on scene by 0900, 5 April, consisted of the two Marco skimmers with deployed boom and with two

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82. USCG, "Summary of PST Offloading Operations Aboard the T/V *Exxon Valdez* 25 March to 4 April 1989," 4.

83. McCall, interview, 21 Apr. 1992.

84. USCG Pollution Report O 052243Z April 1989 (PWS Polrep 26), sec. (1)(E).

85. USCG Pollution Report O 312354Z March 1989 (PWS Polrep 16), sec. (3)(E).

86. USCG Pollution Report O 010737Z April 1989 (PWS Polrep 17), sec. (1)(I).

87. USCG Pollution Report O 030627Z April 1989 (PWS Polrep 21), sec. (1)(F); USCG Pollution Report O 032248Z April 1989 (PWS Polrep 22), sec. (2)(C); and USCG Pollution Report O 050106Z April 1989 (PWS Polrep 24), sec. (3)(F).

88. USCG Pollution Report O 050825Z April 1989 (PWS Polrep 25), sec. (3)(C).

89. USCG Pollution Report O 040730Z April 1989 (PWS Polrep 23), sec. (3)(B); USCG Pollution Report O 032240Z April 1989 (PWS Polrep 22), sec. (3)(I); and USCG Pollution Report O 050106Z April 1989 (PWS Polrep 24), sec. (3)(B).

90. USCG Pollution Report O 312354Z March 1989 (PWS Polrep 16), sec. (3)(E); and USCG Pollution Report O 030627Z April 1989 (PWS Polrep 21), sec. (3)(B).

91. USCG Pollution Report O 032240Z April 1989 (PWS Polrep 22), sec. (2)(C).

92. USCG Pollution Report O 040730Z April 1989 (PWS Polrep 23), sec. (3)(B).

workboats each, stationed downwind from, and to move with, the ship. In addition, a backup skimmer with fender and two workboats, a tug and barge able to pump from all three skimmers simultaneously, a spill spotter helicopter, five to six thousand feet of boom already at the reef, and four thousand feet of additional boom to receive the ship at Outside Bay, were on scene.<sup>93</sup>

The dispersant component of the salvage plan had both readiness and deployment phases. The readiness phase consisted of herring spotters on the skimmers and in a helicopter, midmorning water sampling, two aircraft standing by at Anchorage loaded with a total of 8,300 gallons of dispersant, and a photography airplane to record vessel movement and any dispersant use results. The deployment phase required the FOSC to monitor any spillage that occurred in zone one<sup>94</sup> and to use dispersants at his discretion. He was to notify the dispersant aircraft to sortie, notify the air traffic control vessel USCGC *Rush* to clear the air space, and notify the skimmers to clear the drop zone. Spotter and spray aircraft would fly in stages and water samples would be taken immediately after the last run.<sup>95</sup>

These very substantial precautions, arguably coming after the damage had already been done, reflected demands being made on the FOSC not only by the state of Alaska, but by the other states and the province of British Columbia, whose shores would be passed by the salvaged vessel on its way to repair (then anticipated to take place in Portland).<sup>96</sup>

The ship was afloat at approximately 1030, 5 April, holding position over the reef.<sup>97</sup> It anchored in Outside Bay at 1935. By 2015, the moving safety zone was secured and the fixed zone was in place.<sup>98</sup> By 6 April, the vessel was fully boomed, with a 32-foot water cushion installed in each damaged tank.<sup>99</sup> An underwater hull survey was begun on 6 April, and an underwater internal tank survey began at 0930, 7 April, as did crack-arrester drilling; divers conducted videotaped surveys to develop a repair plan.<sup>100</sup> The oil spill escort barge was replaced by a large bladder for recovery of a light sheen that was coming from the vessel and being held within the containment boom.<sup>101</sup> Twelve thousand feet of boom and a Marco V skimmer were also deployed.<sup>102</sup> American Bureau of Shipping surveyors and marine chemists remained on board.<sup>103</sup> The ship remained potentially explosive. Marine chemists kept a daily log of conditions in tanks not safe for men or hotwork, and the Coast Guard marine inspector resident on board required aircraft to contact him for conditions on deck twenty-four hours prior to landing.<sup>104</sup>

93. USCG Pollution Report O 050825Z April 1989 (PWS Polrep 25), sec. (3)(A)(1).

94. Dispersant use zones are described in chapter 3, "Floating Oil Operations" (see figure 3.2).

95. Ibid., sections (3)(A)(2)(1) and (3)(A)(2)(2).

96. States of Oregon, Washington, and Alaska, and the province of British Columbia, "Contingency Planning for Exxon Valdez Transit to Portland, Oregon," 4 Apr. 1989, no. C289, FOSC Exxon Valdez Archive.

97. USCG Pollution Report O 052243Z April 1989 (PWS Polrep 26), sections (1)(A) and (2)(M).

98. USCG Pollution Report O 061020Z April 1989 (PWS Polrep 27), sections (2)(G) and (E).

99. USCG Pollution Report O 062325Z April 1989 (PWS Polrep 28), sec. (1)(A). Intact tanks were to be inerted before the vessel was moved further.

100. Ibid., sec. (3)(B); and USCG Pollution Report O 080832Z April 1989 (PWS Polrep 31), sec. (2)(C).

101. USCG Pollution Report O 062325Z April 1989 (PWS Polrep 28), sec. (3)(I).

102. USCG Pollution Report O 080832Z April 1989 (PWS Polrep 31), sec. (1)(H)(13).

103. USCG Pollution Report O 090646Z April 1989 (PWS Polrep 33), sec. (1)(B).

104. USCG Pollution Report O 100821Z April 1989 (PWS Polrep 35), sec. (1)(H).

Surveys, repairs, and oil skimming and collection continued on 11 April. Four standby pump systems were kept on board. The ship's engines, engine room, and pump room tank bottoms were inspected, and all found satisfactory.<sup>105</sup> By 13 April, several safety zone incursions caused the USCGC *Rush* to add to its air traffic control duties. The *Rush* now provided small boats to interdict attempted violations. Slops removal and surveys continued.<sup>106</sup> Tank cleaning continued, and removal of shell plating hanging from the ship's bottom began on 16 April.<sup>107</sup>

Repair work continued, with tanks either inerted or opened and blown safe for men and hot work.<sup>108</sup> Oil and slops were now being discharged in quantity. By 10 April, the measurable oil on board had been reduced to 2,392 barrels, and hull cleaning plans were being developed.<sup>109</sup> Tank purging and cleaning continued, as did crack-arrester drilling and repairs. The cutting away of hanging shell plating was completed on 24 April.<sup>110</sup> Tank purging stopped helicopter traffic until 27 April.<sup>111</sup> Tank closing, sealing, and inerting, after the Coast Guard marine inspector had verified that they were oil free, continued.<sup>112</sup> By 10 May, all undamaged (port side) tanks had been cleaned.<sup>113</sup> Tank cleaning continued, until completion on 31 May.<sup>114</sup>

During this time, no significant amount of oil was spilled. Light sheen<sup>115</sup> was removed by sorbents,<sup>116</sup> and small "donut" discharges were removed by skimming.<sup>117</sup>

The installation of a stern towing package began on 30 May, while installation of strain gauges continued.<sup>118</sup> The *Exxon Valdez's* new master and crew, salvage master, and Exxon's repair superintendent were on board on 1 June.<sup>119</sup> The stern towing package was completed on 2 June.<sup>120</sup> Although Portland, Oregon was expected to be the vessel's repair port, Exxon sought permission to proceed to San Diego.<sup>121</sup> Permission was

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105. USCG Pollution Report O 120850Z April 1989 (PWS Polrep 39), sec. (1)(O).

106. USCG Pollution Report O 140617Z April 1989 (PWS Polrep 43), sections (1)(H) and (1)(I).

107. USCG Pollution Report O 170900Z April 1989 (PWS Polrep 48), sec. (1)(E).

108. USCG Pollution Report O 200700Z April 1989 (PWS Polrep 51), sec. (1)(D).

109. USCG Pollution Report O 210704Z April 1989 (PWS Polrep 52), sec. (1)(D).

110. USCG Pollution Report O 250639Z April 1989 (PWS Polrep 56), sec. (1)(E).

111. *Ibid.*; USCG Pollution Report O 270810Z April 1989 (PWS Polrep 58), sec. (1)(F); and USCG Pollution Report O 280620Z April 1989 (PWS Polrep 59), sec. (1)(E).

112. USCG Pollution Report O 050645Z May 1989 (PWS Polrep 66), sec. (1)(E); and USCG Pollution Report O 110515Z May 1989 (PWS Polrep 72), sec. (1)(C).

113. USCG Pollution Report O 110515Z May 1989 (PWS Polrep 72), sec. (1)(C).

114. USCG Pollution Report O 250610Z May 1989 (PWS Polrep 86), sec. (1); USCG Pollution Report O 270618Z May 1989 (PWS Polrep 88), sec. (1)(E); USCG Pollution Report O 300527Z May 1989 (PWS Polrep 91), sec. (1)(E); and USCG Pollution Report O 310454Z May 1989 (PWS Polrep 92), sec. (1)(E). Hull cleaning likewise continued (USCG Pollution Report O 160616Z May 1989 [PWS Polrep 77], sec. [1][E]; USCG Pollution Report O 170541Z May 1989 [PWS Polrep 78], sec. [1][E]; USCG Pollution Report O 180542Z May 1989 [PWS Polrep 79], sec. [1][E]; USCG Pollution Report O 190546Z May 1989 [PWS Polrep 80], sec. [1][E]; and USCG Pollution Report O 010409Z June 1989 [PWS Polrep 93], sec. [1][E]).

115. USCG Pollution Report O 090646Z April 1989 (PWS Polrep 33), sec. (1)(B); USCG Pollution Report O 130618Z April 1989 (PWS Polrep 41), sec. (1)(O); USCG Pollution Report O 220622Z April 1989 (PWS Polrep 53), sec. (1)(E); USCG Pollution Report O 250639Z April 1989 (PWS Polrep 56), sec. (1)(E); USCG Pollution Report O 260637Z April 1989 (PWS Polrep 57), sec. (1)(E); and USCG Pollution Report O 060601Z May 1989 (PWS Polrep 67), sec. (1)(E).

116. USCG Pollution Report O 170900Z April 1989 (PWS Polrep 48), sec. (1)(E); and USCG Pollution Report O 260637Z April 1989 (PWS Polrep 57), sec. (1)(E).

117. USCG Pollution Report O 230628Z April 1989 (PWS Polrep 54), sec. (1)(E).

118. USCG Pollution Report O 310454Z May 1989 (PWS Polrep 92), sec. (1)(E).

119. USCG Pollution Report O 020435Z June 1989 (PWS Polrep 94), sec. (1)(E).

120. USCG Pollution Report O 030533Z June 1989 (PWS Polrep 95), sec. (1)(E).

121. USCG Pollution Report O 030627Z April 1989 (PWS Polrep 21), sec. (1)(F); USCG Pollution Report O 130222Z June 1989 (PWS Polrep 105), sec. (1)(I); and USCG Pollution Report O 140522Z June 1989 (PWS Polrep 106), sec. (1)(E).

issued on 21 June. With weather building,<sup>122</sup> the *Exxon Valdez* was underway for San Diego at 0602, 23 June, escorted as far as the Gulf of Alaska by the USCGC *Active*.<sup>123</sup>

## SECURITY

Throughout these operations there was also the need to guard against incipient environmentalist unrest. By late March, there was an intensifying activist presence near response operations. Disruptions occurred at a press conference and at Exxon's offices on 31 March, and there were reports of a plan to blockade tanker traffic into the port of Valdez.<sup>124</sup> Night boat patrols of the Alyeska Marine Terminal were started, soon requiring that a second twenty-five foot Coast Guard vessel be brought in from Juneau, to augment the patrols.<sup>125</sup> Safety zone violations occurred, but were readily forestalled.<sup>126</sup> On 3 April, police surveillance reports indicated that there were up to twenty activists in Valdez.<sup>127</sup> Two twenty-five footers were assigned to guard the *Exxon Valdez* movement on 5 April.<sup>128</sup> While threats posed by some environmental activists were certainly of concern, it must also be pointed out that members of the press, and sometimes the merely curious, also created management problems that threatened to impede operations.

## SUMMARY

The forty-four million gallons of oil that remained on the *Exxon Valdez* after the spill threatened to magnify the catastrophe that had already occurred as much as five-fold. The removal of this oil became the highest priority of the initial response, and the success of those operations under the conditions that were encountered is one of the least appreciated aspects of the response.

The lightering operation was greatly facilitated by the ready availability of three other Exxon tankers and the ability of the Coast Guard strike teams to rapidly deploy the ADAPTS equipment. These two factors greatly reduced the time during which the vessel remained aground and vulnerable to capsizing or breakup.

The stabilization and lightering operations were the riskiest aspects of the response in terms of the threat they posed to human safety. The stability of the vessel was

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122. USCG Pollution Report R 220356Z June 1989 (PWS Polrep 114), sections (1)(C) and (1)(E); and USCG Pollution Report R 240229Z June 1989 (PWS Polrep 116), sec. (1)(C).

123. USCG Pollution Report R 240229Z June 1989 (PWS Polrep 116), sec. (1)(E). The *Exxon Valdez* anchored off San Diego awaiting permission to enter on 11 July (USCG Pollution Report R 120846Z July 1989 [PWS Polrep 134], sec. [1](E)). After further trimming of hanging shell plating to enter dry dock (USCG Pollution Report R 260530Z July 1989 [PWS Polrep 148], sec. [1](E)), she moored at San Diego on 30 July (USCG Pollution Report R 310307Z July 1989 [PWS Polrep 153], sec. [1](E)).

124. USCG Pollution Report O 010737Z April 1989 (PWS Polrep 17), sec. (1)(K); and USCG Pollution Report O 090700Z May 1989 (PWS Polrep 70), sec. (2)(D).

125. USCG Pollution Report O 012320Z March 1989 (PWS Polrep 18), sec. (2)(E); and USCG Pollution Report O 022300Z April 1989 (PWS Polrep 20), sec. (1)(B).

126. USCG Pollution Report O 030627Z April 1989 (PWS Polrep 21), sec. (2)(E); and USCG Pollution Report O 050825Z April 1989 (PWS Polrep 25), sec. (2)(D).

127. USCG Pollution Report O 040730Z April 1989 (PWS Polrep 23), sec. (1)(I). However shadowy, some could be ugly, including one death threat (ICP Homer daily report, 26 Jul. 1989, sec. [7](C); and USCG Pollution Report R 280331Z July 1989 [PWS Polrep 150], sec. [2](A)).

128. USCG Pollution Report O 052243Z April 1989 (PWS Polrep 26), sec. (2)(K).



questionable, the possibility of explosion real, and further loss of cargo a distinct possibility. Against this backdrop Exxon, its salvage master, and the Coast Guard acted rapidly and decisively in successfully stabilizing, lightering and salvaging the vessel.

During this time period more so than in any other, the multi-mission nature of the Coast Guard was displayed. The FOSC was directing the cleanup under the Federal Water Pollution Control Act (FWPCA), the COTP was both controlling the movement of vessels and creating safety and security zones under the Ports and Waterways Safety Act (PWSA). The officer in charge of marine inspection was investigating the casualty and inspecting the temporary repairs to the vessel prior to its movement under Title 44 U.S.C., subtitle II. All this while the USCGC *Rush* was controlling airborne traffic and enforcing a security zone around the *Exxon Valdez*.

## CHAPTER 3. FLOATING OIL OPERATIONS

### OVERVIEW

Many aspects of the *Exxon Valdez* response unfolded over an extended period of time. Shoreline cleanup operations, for example, took place during four summers, from 1989 through 1992. With free-floating oil operations, however, the relevant history occupies the first hundred days of the response, after which the oil that had not dispersed, evaporated, or been recovered had largely come to rest on response area shorelines. After June, free-floating oil recovery operations were for all intents and purposes discontinued.<sup>1</sup> By the standards of previous spills, an unprecedented amount of effort had been put into capturing free floating oil. But by the standards of oil recovered for the effort expended, floating oil operations following the *Exxon Valdez* spill served mostly to reinforce the message that prevention is the only sure way to prevent massive damage from oil spills.

Success in recovering floating oil is very time dependent. The first forty-eight hours following a spill are critical. During that time, the makeup of the oil changes as the “light end” aromatic hydrocarbons evaporate, leaving higher molecular weight hydrocarbons and aliphatics. When the oil is fresh, skimming, the use of dispersants, and in-situ burning are all more effective. This period is often the “window of opportunity” and if the window is missed, as was the case in the *Exxon Valdez* oil spill, the cleanup can become vastly more difficult.<sup>2</sup>

The first seventy-two hours following the grounding of the *Exxon Valdez* proved to be the spill’s strategic “window,” as an intense storm at the end of this period effectively ruled out many options that might have been employed. As a result, it is also a period that has been the subject of considerable speculation about missed opportunities. This chapter describes the chronology of floating oil recovery efforts after which it describes specific issues, technologies, and recovery and containment methods employed during the free oil recovery phase of the response (figure 3.1).

### NORTH SLOPE CRUDE OIL

Crude oil is a complex mixture of organic (hydrocarbon) and inorganic (non carbon-based) compounds. Hydrocarbons in crude oil fall into two groups or fractions: aliphatic and aromatic. Aromatic hydrocarbons are the more toxic, and because of their lower molecular weight, they tend to volatilize or disperse in the water column more readily. The inorganic constituents of crude oil include such elements as sulfur, nickel,

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1. Exxon Production Research Company, “Valdez Oil Spill Technology 1989 Operations,” 1990, no. W1950, FOSC Exxon Valdez Archive, 9.

2. Comdr. S. McCall, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, Lt. T. Staats, and Lt. Comdr. H. Young, Anchorage, 29 July 1991, no. F111, tape, FOSC Exxon Valdez Archive.

vanadium, and nitrogen.<sup>3</sup> The specific properties of crude oils vary greatly, depending on source. Alaska North Slope crude tends to contain high concentrations of toxic aromatic hydrocarbons and inorganic sulfur compounds.

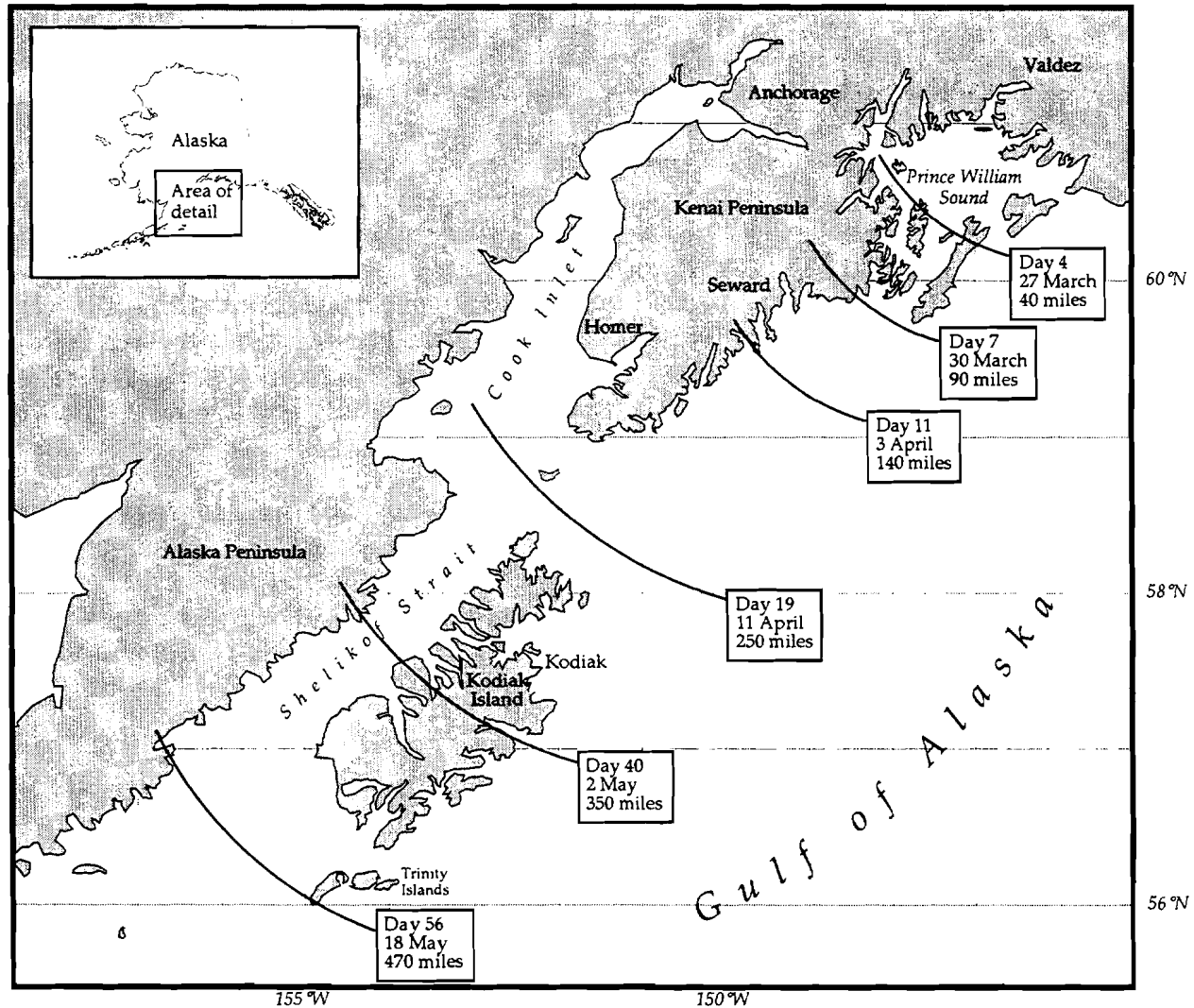


Figure 3.1. Oil progression from day 4 to day 56 following the spill.

The force of gravity causes spilled oil to disperse rapidly, with oil spreading relatively rapidly into a thin layer over a substantial surface area.<sup>4</sup> Winds, tides, currents, temperature, and sea state all influence the spread of oil. As evaporation and dissolution take place, the molecular structure of crude oil is altered and some of the oil mass will be broken into discrete droplets in the water column. Wave and/or wind action tends to accelerate the dispersion process.

3. Alaska Oil Spill Commission, Final Report, in "Spill: The Wreck of the Exxon Valdez" Feb. 1990, no. W1593, FOSC Exxon Valdez Archive, 97.

4. D. Ollis, "Slick Solution for Oil Spills," *Nature* 358 (6 Aug. 1992): 453-54.

The light chop present at the time of the *Exxon Valdez* spill seemingly favored natural dispersion over evaporation. Following the logic presented by the Alaska Oil Spill Commission in its report, this would suggest that lower molecular weight hydrocarbons would remain within these droplets, possibly exposing marine organism to such toxic aromatic compounds as benzene, ethylbenzene, toluene, and xylene. Tests of North Slope crude oil suggested that only about 15–20 percent of the spilled oil could be expected to evaporate.<sup>5</sup>

In heavy seas, spilled oil is agitated and mixed with water forming an emulsion called “mousse.” In the *Exxon Valdez* spill, seas were fairly calm during the first 2.5 days, thus little mixing action was taking place. On Sunday night (26 March), however, high winds transformed the oil mass into sheens and mousse, and the spill front advanced twenty miles during a single night. The area covered by the slick, after the storm, had increased to nearly five hundred square miles. Because the formation of mousse retards the processes of breakdown and evaporation, the storm that began on the third day of the response created considerable additional difficulties for the already slow-moving effort. Emulsified oil is a stubborn substance that is mobile and very difficult to clean up. Pushed by winds, waves, and currents, it eventually came to rest on shorelines or formed into tarballs (which also tend to wash up on shorelines).

## THE INITIAL RESPONSE

The National Response Team estimated that 5.8 million gallons of oil escaped from the *Exxon Valdez* during the first 3.5 hours following the grounding.<sup>6</sup> If these figures are accurate, approximately 460 gallons of crude oil was lost per second during that period. CWO Mark DeLozier, the chief of marine safety at Marine Safety Office (MSO) Valdez in 1989, and one of two Coast Guard personnel who boarded the *Exxon Valdez* within the first three hours following the grounding, reported encountering oil about two hundred yards from the vessel on its north side. He observed that there was about six to ten inches of oil on the surface and oil billows on the port side for about half the length of the ship, which were boiling about three to four feet above the surface of the water. The aroma of crude oil was very strong as they neared the vessel, he stated.<sup>7</sup>

Conditions at the time of the grounding were basically calm. Although there was a light mix of rain and snow, visibility was ten miles.<sup>8</sup> There was a light northerly wind causing “slight” seas. At 0227, oil was observed at a distance of one-half mile from the ship. At 0930, it had formed a slick that measured about two miles by three miles, which was moving slowly in a south by southwesterly direction. By noon, the slick measured three miles by five miles, and modest one-foot waves were present.<sup>9</sup>

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5. Alaska Oil Spill Commission, 98.

6. S. Skinner (DOT) and W.K. Reilly (EPA), “The Exxon Valdez Oil Spill: A Report to the President” (prepared by The National Response Team, May 1989), appendix 1, no. C1399, FOSC Exxon Valdez Archive.

7. CWO M. DeLozier, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, Valdez, 17 July 1991, no. F174, notes, FOSC Exxon Valdez Archive.

8. USCG Pollution Report P 241446Z March 1989 (PWS Polrep 1), sec. (1)(D).

9. Alyeska Pipeline Service, “Supplemental Twenty-Four Hour Chronology of Events Following the Grounding of the Exxon Valdez, March 24, 1989,” 24 Mar. 1989, no. C1002, FOSC Exxon Valdez Archive, 2, 5, 14, and 16.

Nearly all of the crude oil that was lost escaped from the vessel during the first twenty-four hours, with the huge slick continuing to spread, in relatively calm waters.<sup>10</sup>

The Alyeska Pipeline Service Company initially responded to the spill, as obligated under the local contingency plan. (Exxon assumed the lead role on 25 March.)<sup>11</sup> Within the first hour Alyeska was rousing its workforce, and organizing its response. Before 0500, Commander Steve McCall, the predesignated Federal On Scene Coordinator (FOSC), directed Alyeska to treat lightering as the number one priority, and to transport lightering equipment to the spill site.<sup>12</sup> When lightering became Alyeska's first priority, it meant that containment and recovery of escaped oil was relegated to a lower status, an especially problematic circumstance in light of Alyeska's lack of preparedness.

Alyeska nevertheless had an obligation to dispatch its booms and skimmers to the site, and to initiate containment and recovery operations. Alyeska's lack of readiness has been the subject of considerable discussion, and some have questioned whether even the most smoothly executed delivery of available equipment would have significantly diminished the effects of the spill.<sup>13</sup> Alyeska was required to have four small skimmers, one barge, and 11,500 feet of boom on hand. (If all of the available boom had been deployed, it could have formed a circle approximately 0.7 miles across. Whether such deployment could have effectively contained the oil had it been effected soon enough has also been debated, as have the safety questions associated with containing so much volatile oil so close to the grounded vessel.) Governor Cowper, a frequent critic of the early response, seemed later to concede that an effective response was virtually impossible: "Given the hand Exxon was dealt, I think they've done about as well as they could under the circumstances."<sup>14</sup>

Coast Guard Commander Dennis Rome took part in an overflight of the spill area during the afternoon of 25 March (Saturday). He reported sighting "4 skimming systems in the water south to southwest of the grounded vessel in good recoverable oil." But it was clear that those vessels would not be adequate for the challenge that was ahead. That evening Commander Rome met with Exxon Shipping Company's Frank Iarossi, who had been dispatched to the scene to serve as Exxon's coordinator, and members of Exxon's management team. A substantially larger flotilla of equipment, including skimmers, barges, and boats for boom deployment, was agreed

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10. USCG Pollution Report P 260852Z March 1989 (PWS Polrep 5), sections (1)(A) and (B); and NOAA Hotline 17, report 8, 26 Mar. 1989 (this report declared that the vessel "was no longer leaking"). The Polrep reported that "a sea water cushion" rested under the remaining oil within ruptured tanks, and that an "estimate of 250,000 barrels" had been released (in the same Polrep another estimate placed the figure at 242,000 barrels).

11. NOAA Hotline 17, report 4, 24 Mar. 1989.

12. Alyeska Pipeline Service, 10. The gravity of the situation was underscored at 1130 when a computer analysis determined that "if the ship comes off the reef, it might roll over within 30 to 90 seconds." McCall was commanding officer at MSO Valdez, and assumed the FOSC role, as is specified in the NCP (Alyeska Pipeline Service, 16).

13. Cutter Information Corporation, "Contingency Plan Implementation and Cleanup," *Oil Spill Intelligence Report* 12 (3 Apr. 1989): 2. The report noted that only limited personnel were at the terminal, due to a holiday schedule. The boom transport barge was disabled, and equipment had to be loaded onto a tug before it could be moved to the spill area. The article also stressed the theme that the delays were probably not that significant in view of the magnitude of the spill.

14. M. Satchell and B. Carpenter, "The Disaster That Wasn't," *U.S. News and World Report* 107 (18 Sept. 1989): 68. The same article quotes Dennis Kelso, ADEC commissioner, as saying Alyeska's Response Plan is "the biggest piece of maritime fiction since Moby Dick." Kelso, as the article points out, did not explain why ADEC had (earlier) approved the plan.

upon, and procurement was begun.<sup>15</sup> By Sunday morning (26 March), five skimmers were operational, and about three miles of boom had been deployed.<sup>16</sup> Assembly of the needed larger fleet was delayed, however, as it would take several days for additional vessels to arrive on scene.

## FLOATING OIL OPERATIONS

In this section the principal methods that were employed or tested to deal with floating oil are discussed. These included: dispersants; in-situ burning; and the booming, skimming, and recovery of oil. Additionally, the methods of tracking the oil are addressed.

### DISPERSANTS USE

Dispersants are chemical compounds designed to be sprayed onto an oil slick to reduce the cohesiveness of the slick, thus permitting it to break down into droplets small enough to disperse into the water column. It is generally agreed that some wave action and/or current movement is necessary for sufficient mixing of the compound into the oil slick to permit effective dispersion. Use of dispersants requires not only favorable environmental conditions, but also adequate logistical resources. These include adequate supplies of chemical dispersants, aircraft capable of delivering the product to the spill site, and the proper equipment for its application.<sup>17</sup>

Just three weeks before the grounding of the *Exxon Valdez*, the Alaska Regional Response Team (RRT) had approved the use of dispersants as a part of its Prince William Sound response plan.<sup>18</sup> The decision followed months of discussion, and it permitted Alyeska to begin obtaining supplies of dispersant chemicals, and to devise a plan for possible dispersant use. Knowing that dispersants were part of the response plan, Commander McCall began discussing their possible use with Alyeska within the first few hours. "We may want to use dispersants," reported McCall, "you [Alyeska] better think about getting some delivery equipment up here."<sup>19</sup> At the time of the grounding the supply of the dispersant Corexit 9527, stored at Valdez, consisted of sixty-nine drums.<sup>20</sup>

Dispersant use had been addressed in the "Oil Dispersant Use Guidelines for Prince William Sound," developed by the RRT. The guidelines divided the sound into three areas for purposes of dispersant application. Within "zone one," the FOSC had

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15. Comdr. D. D. Rome, personal notes of the T/V *Exxon Valdez* spill response, 25 Mar. 1989, no. C954, FOSC Exxon Valdez Archive.

16. Cutter Information Corporation, "Contingency Plan Implementation and Cleanup," 3.

17. National Transportation Safety Board (NTSB), "Marine Accident Report: Grounding of the U.S. Tankship Exxon Valdez on Bligh Reef, Prince William Sound Near Valdez, Alaska, March 24, 1989" (report no. NTSB/MAR-90/04, 31 Jul 1990), no. W1962, FOSC Exxon Valdez Archive, 147-148.

18. Amendment to the memorandum of agreement between USCG/EPA/ADEC regarding "Oil Dispersant use Guidelines for Prince William Sound," signed by Alvin Ewing (EPA) and Capt. Glen E. Haines on 10 Mar. 1989 and Lynn J. Tomich Kent (ADEC) on 20 Mar. 1989, no. C953, FOSC Exxon Valdez Archive.

19. McCall, interview, 29 July 1991.

20. Comdr. S. McCall, "Exxon Valdez Oil Spill-24 March 1989, Oil Spill Dispersant Application," 20 Apr. 1989, no. C952, FOSC Exxon Valdez Archive. The drums were fifty-five gallon capacity, thus the total available supply was about thirty-eight hundred gallons of dispersant.

preapproval to permit dispersant use at his discretion. "Zone two" was considered more biologically sensitive; following the dictates of the National Contingency Plan (NCP), 40 CFR Subpart J, the FOSC needed to secure concurrence of both the U.S. Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC) before authorizing dispersant use. In "zone three" dispersant use was not recommended, but could be approved by the FOSC on a case-by-case basis after consulting with the RRT and securing the approval of both the EPA and ADEC.<sup>21</sup> Zone three was generally closest to the mainland (figure 3.2).

Bligh Reef, upon which the *Exxon Valdez* grounded, was located in zone two. As leaking oil moved southwest from the stranded vessel, it moved into a zone one (FOSC discretionary) area. At 0630, on 24 March, Commander McCall contacted Alyeska to request that they initiate a request to the RRT for dispersant use. At 0842 on 24 March, Alyeska formally requested permission to utilize dispersants.<sup>22</sup> The FOSC convened a conference at noon to discuss both dispersant use and possible in-situ burning with members of the RRT. Following the conference, at 1510, the FOSC granted permission for a dispersant "test" on the leading edge of the slick—now in a zone one area. Commander McCall considered the trial run to be a way to "determine the suitability of dispersant use in this incident."<sup>23</sup>

Alyeska officials later reported that it held as of Friday (24th) a fifty drum dispersant inventory at its terminal. That figure may have been low based on information from other sources.<sup>24</sup> A canvass of other state sources revealed that another 314 barrels were on hand and available for transport to the response area. Alyeska also made the strategic decision that, owing to the frequency of weather problems at the Valdez airport, dispersant operations would be staged instead from the municipal airport at Anchorage.<sup>25</sup>

By 1700 dispersants had been loaded into a mechanical spray bucket, rigged to a helicopter. A second helicopter contained the FOSC and an Alyeska observer, while state authorities circled nearby in a fixed-wing aircraft.

The test was performed south of Bligh Island, about halfway between Bligh and Naked islands. Several spray passes were made, and the three hundred gallon bucket appeared to function without problems. The test was conducted at 1800, a time later judged to have been less than ideal because seas were calm and little mixing of dispersants seemed to have taken place. Moreover, cloudy skies and fading light made it difficult

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21. RRT, "General Alaska Dispersant Use Criteria," no. C953, FOSC Exxon Valdez Archive. Zones were determined by four factors: physical parameters such as bathymetry and currents; biological parameters (sensitive habitats); nearshore human use activities; and time required to respond.

22. Alyeska Pipeline Service, 14.

23. McCall, "Exxon Valdez Oil Spill-24 March, 1989, Oil Spill Dispersant Application," 2.

24. Alyeska Pipeline Service, 18; McCall, "Exxon Valdez Oil Spill-24 March 1989, Oil Spill Dispersant Application," 18; and Alaska Oil Spill Commission, 18. According to McCall's understanding, there were sixty-nine barrels of dispersant "available at the terminal." The Alaska Oil Spill Commission stated that Alyeska had "less than 4,000 gallons [approximately 72 barrels] of dispersant at its terminal." Based on what is thus implied, it appears that the Oil Spill Commission's assumptions were near those held by McCall.

25. Alyeska Pipeline Service, 18.

to view the effect of dispersant chemicals upon the oil. The results were declared inconclusive.<sup>26</sup>

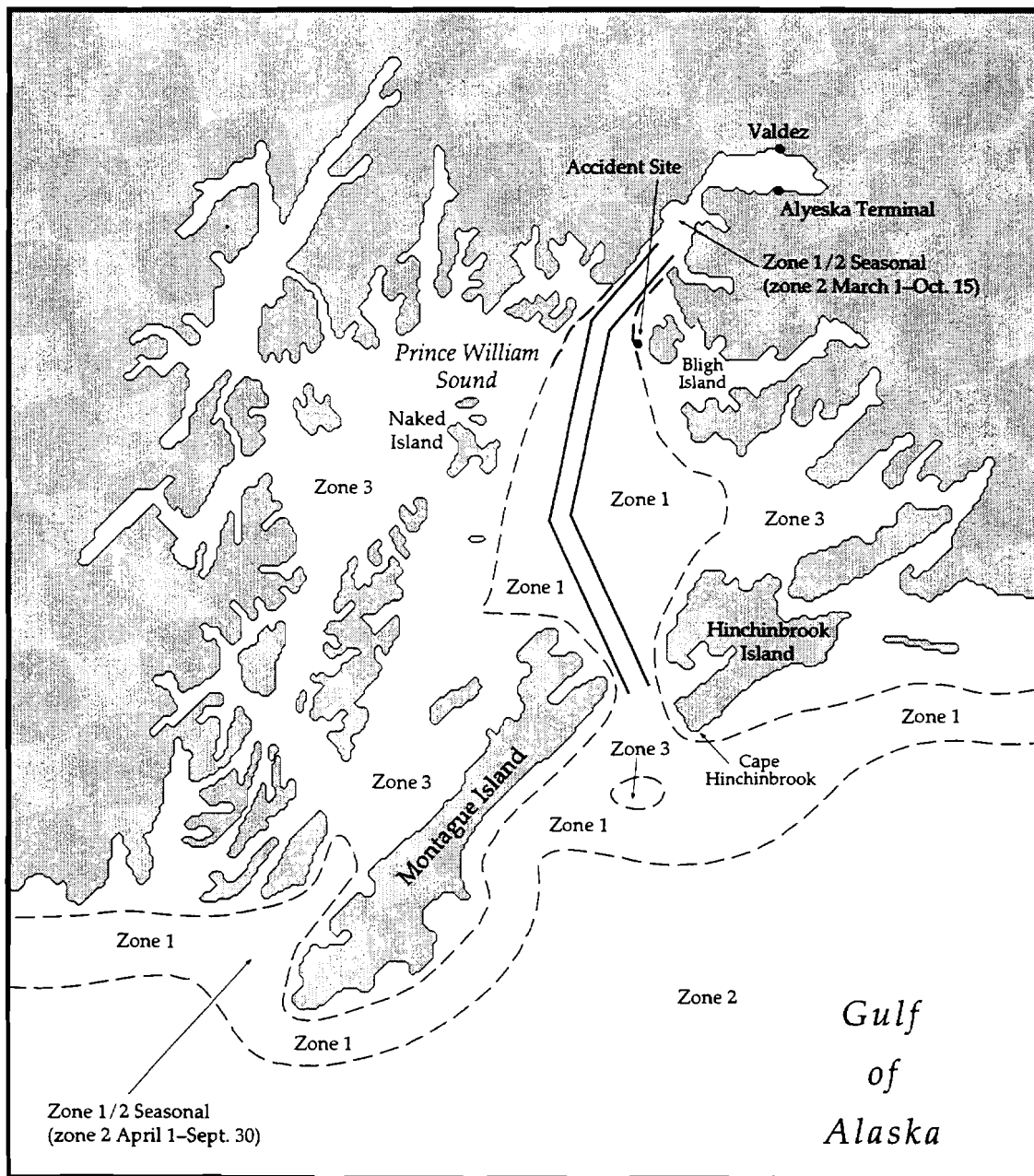


Figure 3.2. Dispersant zones in Prince William Sound, and the Gulf of Alaska.

The FOSC later observed that the long delay (sixteen hours) leading up to the first test may have handicapped its chances for success. Commander McCall noted that: "Many documented tests...have occurred within approximately 5 hours after the initial release of oil. After that time the viscosity of the oil increases and dispersant effectiveness is

26. McCall, "Exxon Valdez Oil Spill-24 March 1989, Oil Spill Dispersant Application," 2.



reduced.”<sup>27</sup> But the question of efficacy as demonstrated by testing may have been largely academic. Commander McCall also noted in his report that, according to his calculations, it would have taken “at least 500,000 gal.[lons] of dispersant...to treat the...250,000 [barrels] of oil released.”<sup>28</sup>

By Saturday 397 drums (21,835 gallons) of dispersant were on hand, and Exxon’s Frank Iarossi declared that, “Exxon was ready to begin full-scale application of aerial dispersants.” (Exxon had assumed the responsible party role from Alyeska late on the 24th.) Another 471 drums (25,905 gallons) arrived on Sunday and Exxon reported that additional deliveries could be expected on a daily basis. At a rate of fifty-five hundred gallons per application, the amount on hand was sufficient to treat about nine square miles. The total supply available at this point was still only about 10 percent of the quantity McCall pointed out would have been necessary to treat the entire slick. Alyeska also dispatched a C-130 cargo aircraft to Phoenix, Arizona, to obtain an Aerial/Dispersant Delivery System Package (ADDSPAC), for heavy-volume application of the floating oil dispersant Corexit 9527.<sup>29</sup>

With logistical preparations apparently ready for conducting further dispersant applications, response managers were faced with important decisions. The RRT met in Valdez to discuss response options. Conditions in Prince William Sound remained relatively calm, and the oil slick was somewhat stable. Calm seas meant the natural dissolution and dispersion processes were not significant, and conditions were not optimal for dispersant use. A second test application was scheduled, this time using a C-130 with a twenty-five hundred gallon Corexit 9527 payload. Once again, tests were conducted during the late afternoon and the results were judged inconclusive. Exxon’s Frank Iarossi, who (along with other Exxon supervisors) observed the proceedings from a nearby helicopter, regarded the test as “successful.” The FOSC was not yet convinced, noting that more testing would be necessary. Poor light contributed to the uncertainties about test results. An unidentified Coast Guard strike team member, along with an ADEC observer, suggested that the application of dispersants had perhaps missed the oil slick.<sup>30</sup>

On Sunday, 26 March, testing continued. A late morning drop of thirty-five hundred gallons of dispersant from a DC-6 aircraft was declared unsatisfactory. This time the dispersant spray nozzles failed to deliver an even spray pattern which is needed for dispersants to work effectively. What was needed, according to Exxon’s contracted dispersants expert, was another test.<sup>31</sup> Another trial run was authorized, and at mid-afternoon the C-130 that had been used in the previous day’s tests took off for a fifty-five hundred gallon application. This time the results were more encouraging. Oil seemed to be dispersing into the water column, perhaps because light wave action was helping to mix dispersant chemicals into the oil slick. An Exxon spokesperson declared

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27. Ibid.

28. Ibid., 1.

29. Exxon, news release, 1 Apr. 1989, no. C941, FOSC Exxon Valdez Archive.

30. Alaska Oil Spill Commission, T/V Exxon Valdez Oil Spill Chronology (day two), in “Spill: The Wreck of the Exxon Valdez,” vol. 4, appendix N, 9.

31. McCall, “Exxon Valdez Oil Spill-24 March 1989, Oil Dispersant Application,” 4.

"now is the time to use dispersants."<sup>32</sup> Hopeful spill managers declared that on Monday, 27 March, they would continue application of dispersants.<sup>33</sup> Unfortunately, the winds that had been helpful earlier in the day increased, and an overnight storm in Prince William Sound caused drastic changes in both plans and conditions in the response area.

Monday's (27 March) weather conditions were disastrous for cleanup operations. Winds had increased throughout the previous night, becoming heavy with gusts to seventy knots. The oil slick moved approximately twenty miles during the night, and morning overflight reports revealed that there had been heavy shoreline impact upon Eleanor and Knight islands, and that the oil was continuing to "move extremely rapidly" as winds continued during the daylight hours. The approved plan for Monday's wholesale dispersant applications was scuttled, as gale warnings continued throughout the morning.<sup>34</sup> Skimming and other response operations were also suspended, as spill managers could do little other than to watch the spread of oil to increasingly far-flung areas of the sound. As the oil was churned by storm action, it continued to emulsify, becoming increasingly resistant to chemical-induced breakdown.<sup>35</sup>

In an effort to show at least some progress, a C-130 mission to drop dispersants into a zone three area near Knight Island was authorized on a one-time basis for Monday afternoon. After several problems and delays, the most significant of which was failure of the C-130 to arrive at the designated target location, the drop was canceled. In the meantime, two helicopter pilots reported that they had sighted a drop of dispersants taking place (at 1500) at a location four miles east of Naked Island. The Naked Island area drop, which had not been authorized by the FOSC, the EPA, or ADEC, was later confirmed to have taken place through contact with Exxon's contractor.<sup>36</sup>

On Tuesday, Exxon asked for permission to employ dispersants in a zone three area near Eleanor Island. This time the RRT declined its approval, declaring that "dispersants were not appropriate for use in this Zone 3 area." Exxon then asked for permission to drop dispersants into a zone one area, and was given FOSC approval. Exxon later reported that the test had been highly successful, though no observers from ADEC or the FOSC had been present. Despite Exxon's optimism, the test proved to be not without flaws; (1) a portion of the dispersants had been sprayed into an unauthorized area; and (2) members of the Coast Guard Pacific Strike Team (working on the deck of the *Exxon Valdez*) were sprayed during one of the plane's discharge runs.<sup>37</sup>

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32. NOAA Hotline 17, report 10, 26 Mar. 1989.

33. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (2)(C).

34. USCG Pollution Report O 280821Z March 1989 (PWS Polrep 9), sec. (2)(C).

35. Cutter Information Corporation, "Contingency Plan Implementation and Cleanup," 3.

36. McCall, "Exxon Valdez Oil Spill-24 March 1989, Oil Dispersant Application," 5.

37. Ibid. The zone one drop during which problems were encountered was to disperse oil which had leaked from the *Exxon Valdez* only that morning. This may explain its reported success. The oil to which the dispersants were applied was "fresh" rather than emulsified.

State officials became increasingly skeptical of Exxon's dispersant application efforts. On Wednesday, 29 March, ADEC and Alaska Department of Fish and Game (ADF&G) announced that they could not approve requests for zone three applications until it is evidenced that "dispersant application...[will] be accurately targeted and effective in achieving dispersal objectives." State authorities cited these recent misapplication incidents which, in their view, could be jeopardizing sensitive shoreline and nearshore habitats in zone three.<sup>38</sup> Since state approval was necessary for both zone two and zone three applications, the state's decision could have effectively limited further dispersant use to zone one areas only. But by this time, the sixth day of the response, the dispersant use window had effectively closed itself. At the Wednesday meeting of the RRT it was determined that "dispersants are no longer considered feasible for use at this spill."<sup>39</sup> On Thursday, Exxon declared that dispersant use was no longer considered an option." In the meantime, an aircraft, loaded with dispersants and prepared for short-notice deployment, stood by at the Anchorage airport. Its use would be limited to the contingency that new discharges might occur from the still-grounded *Exxon Valdez*.<sup>40</sup>

By Friday, one week after the spill, the dispersant use question was becoming a major focus of media attention. Reuters News Service reported on contentions by high-level Exxon officials that "state and Coast Guard officials" had handicapped initial cleanup operations by failing to provide "authority to do anything until 6:45 P.M. Sunday."<sup>41</sup> The Alaska Department of Environmental Conservation responded that it had "not, in any way, delay[ed] the use of dispersants on the T/V Exxon Valdez oil spill." The Alaska Department of Environmental Conservation had not, it maintained, been directly involved in dispersant-use decisions.<sup>42</sup> Moreover, state authorities noted that "earlier use of the chemicals would not have been effective because the waters were too calm."<sup>43</sup> The Coast Guard's RRT representative later stated his view that Commander McCall's actions had not slowed Exxon's response efforts. Exxon wasn't prepared to do more than testing, and testing was authorized as soon as Exxon was ready, he declared.<sup>44</sup> Commander McCall later pointed out that only 3,795 gallons of dispersants had been available "during the critical time." As additional supplies arrived, conditions were not particularly favorable for "dispersant action to occur" during the spill's initial forty-eight hour period, according to the FOSC.<sup>45</sup>

The FOSC pointed out at a news conference that his role went beyond simply approving dispersants whenever their use is requested. It was his obligation to ensure

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38. B. Lamoreaux (ADEC) and B. Baker (ADF&G), letter to Comdr. S. McCall, 29 Mar. 1989, no. C938, FOSC Exxon Valdez Archive.

39. NOAA Hotline 17, report 19, 29 Mar. 1989.

40. USCG Pollution Report O 302253Z March 1989 (PWS Polrep 14), sec. (1)(G).

41. Reuters, "Exxon Says Cleanup Authorization Was Late," *The New York Times*, 31 Mar. 1989.

42. ADEC, press release, 31 Mar. 1989, no. C940, FOSC Exxon Valdez Archive.

43. Reuters, 31 March 1989. Lt. Governor McAlpine stated this position in *The New York Times* article.

44. Lt. Comdr. H. Young, "89/DISP/BURN" (a paper on the dispersant/in-situ burn issue), 20 Aug. 1991, no. F800, FOSC Exxon Valdez Archive. Comdr. McCall later commented upon the state of Exxon's readiness, pointing out that the helicopter used for the first (bucket) test of dispersants was still being rigged by welders during late afternoon hours on 24 March. Once that mission was underway, all that could be accomplished is a very limited drop into calm seas in poor daylight conditions. At the time, however, that was all of the equipment which was available.

45. Comdr. S. McCall, opening comments at a USCG news conference, 2 Apr. 1988, no. C2003, FOSC Exxon Valdez Archive.

that dispersants had a reasonable chance for success, prior to authorizing their use. Declaring that three key elements necessary for effective use of dispersants were not present, Commander McCall restated his position, "We felt strongly that the use of dispersants was not an acceptable cleanup option."<sup>46</sup>

There were scattered additional attempts to use dispersants after this time. On 2 April, for example, after the leading edge of the oil had passed Montague Strait and moved into Blying Sound, Exxon requested permission to attempt a fifty-five hundred gallon application in an area off Point Elrington. There appeared to be some success within sheens, but little effect on emulsified oil. Two more drops were authorized during the same day, with similar results. While it seemed clear that Corexit was effective when applied to fresh oil, most of the oil had by then formed into mousse, which resisted chemical breakdown.<sup>47</sup> The EPA declared, on 8 April, that further dispersant applications would "not be effective and therefore inappropriate."<sup>48</sup>

Exxon officials had not yet ruled out the use of dispersants. On 10 April, a major new experiment was proposed. Up to twenty-five thousand gallons of dispersants would be applied to weathered oil at a rate of one part dispersant to ten parts oil.<sup>49</sup> (The amount proposed was about double the "normal" application rate.) The test would involve up to five dispersant drop flights, and was intended to evaluate the ability of dispersants to break up emulsified oil in open water. For three days (11, 12, and 13 April), efforts were made to carry out these tests. During the first two days, the combination of bad weather, poor visibility, communications problems, and logistical difficulties prevented even a small drop of dispersants, however.<sup>50</sup> Finally, on 13 April, a fifty-five hundred gallon load of dispersant was delivered onto floating oil at 150°45' W by 59°11' N (eight miles south of Gore Point). Although there seemed to be some activity around sheening edges, nothing significant took place to suggest that consolidated oil was breaking down, and further testing was called off.<sup>51</sup>

As mid-April approached it became increasingly evident that floating oil dispersants could no longer be considered a viable response option. The oil continued to thicken; skimmers were often becoming clogged by emulsified crude, and experiments with Corexit 9527 had not been encouraging. Floating oil operations had come to rely exclusively on skimmers and booming. Exxon later declared that most of the oil was blown out of the approved zone during the storm of 26 March.<sup>52</sup> But questions about what might or might not have been accomplished during the early pre-storm "window" had factors been more favorable at the time, have persisted to the present.

46. *Ibid.* The "three elements" were timing (the spiller was not ready for an application during the first "optimum time" ten to twelve hours of the spill), wave action (there was insufficient wave energy for effective mixing), and availability of supplies (there was insufficient supply of the product on hand).

47. McCall, "Exxon Valdez Oil Spill-24 March 1989, Oil Dispersant Application," 5. During one of the later flights there was another encroachment into an unauthorized zone. This time it involved an area which had been a zone one, but which changed to a zone two designation on 1 April. The error was attributed to the pilot's lack of awareness of the changed designator.

48. G. Kellogg (EPA), letter to Capt. G. Haines, 8 Apr. 1989, no. C618, FOSC Exxon Valdez Archive.

49. USCG Pollution Report O 110845Z April 1989 (PWS Polrep 37), sec. (1)(B).

50. USCG Pollution Report O 130618Z April 1989 (PWS Polrep 41), sec. (1)(B).

51. USCG Pollution Report O 140617Z April 1989 (PWS Polrep 43), sec. (1)(C).

52. Exxon, "Valdez Oil Spill Technology 1989 Operations," 9.

## IN SITU BURNING

One of the early response options considered by spill managers was in situ, or "in place," burning of floating oil. While the idea of in situ burning is simple in concept, successful in situ burning generally requires much more than simply "lighting a match" to the oil. The spilled oil must first be gathered into a mass sufficient to sustain combustion by means of a special "fire boom," usually dragged through the slick by paired tow boats.<sup>53</sup>

Once the oil is gathered into a combustible mass, it is ignited. In Prince William Sound operations, combustion was accomplished by means of a small plastic bag of jellied gasoline, lighted, and permitted to float back into the "U" of the boom where the oil was thickest.

The tow vessels move during the burn, controlling the burn area through speed adjustments. When the vessels slow down, the burn area tends to increase, and when they speed up, the burn tends to consolidate towards the apex of the towed boom. Once the burn is finished, the resulting tar-like residues can be collected. If the burn has been effective, the remaining mass is a very small percentage of the original oil volume.

As the Alaska Oil Spill Commission report notes, to burn effectively: "[The] slick must be at least 3 millimeters thick, must have adequate volatility, must be continuous, and cannot be emulsified. This means that the burn must be conducted in very special conditions, generally in the first day of the spill when the product is still fresh and not much evaporation has occurred." Moreover, among the technique's downside features is "the effect of the toxic smoke on nearby populations."<sup>54</sup>

Alyeska was notified (at 1128 on 24 March) that the Cook Inlet Response Organization was sending "burn equipment"<sup>55</sup> with a shipment of dispersants that was on its way to Valdez. At noon, Alyeska submitted a request to the FOSC that in situ burning be employed in the response effort. At 1500 the RRT received Alyeska's request for a burn permit, which stated, "Pending this decision, Alyeska continues to mobilize the necessary resources for in situ burning, such as fireproof boom and ignition sources."<sup>56</sup> The state issued a burn permit on 24 March.<sup>57</sup> The only time the NCP allows the OSC to independently authorize the use of in situ burning or other chemicals is if the OSC feels human life is endangered.<sup>58</sup> This was not the case with the *Exxon Valdez* oil spill.

Later on Friday, 24 March, preparations for use of in situ burning went forward. A helitorch and spill bucket were ordered from Oregon. A shipment of one thousand feet of fire boom was confirmed for 2300 on 25 March, in addition to the Cook Inlet Response Organization burn equipment that was made available. Late on 25 March, a

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53. Fire boom is a product of the Minnesota Mining and Manufacturing Company (3-M), and is constructed of materials which give it the capacity to keep a burning oil mass intact without itself burning in the process.

54. Alaska Oil Spill Commission, 109. The commission also noted that newly spilled oil can produce large volumes of toxic volatile organic compounds, so that there is a tradeoff when the matter of air pollution is considered.

55. Fire boom and a helitorch, according to an earlier report.

56. Alyeska Pipeline Service, 18.

57. National Transportation Safety Board, 148-149.

58. 40 CFR 300.84 (c).

"test" in situ burn took place near Goose Island, in Prince William Sound (figure 3.3). An estimated fifteen thousand gallons of crude oil were collected and ignited, burning for about seventy-five minutes. The test was regarded as very successful after spectacular flames reduced the mass to a small (about one hundred square foot) mat consisting of a tar-like substance.<sup>59</sup>

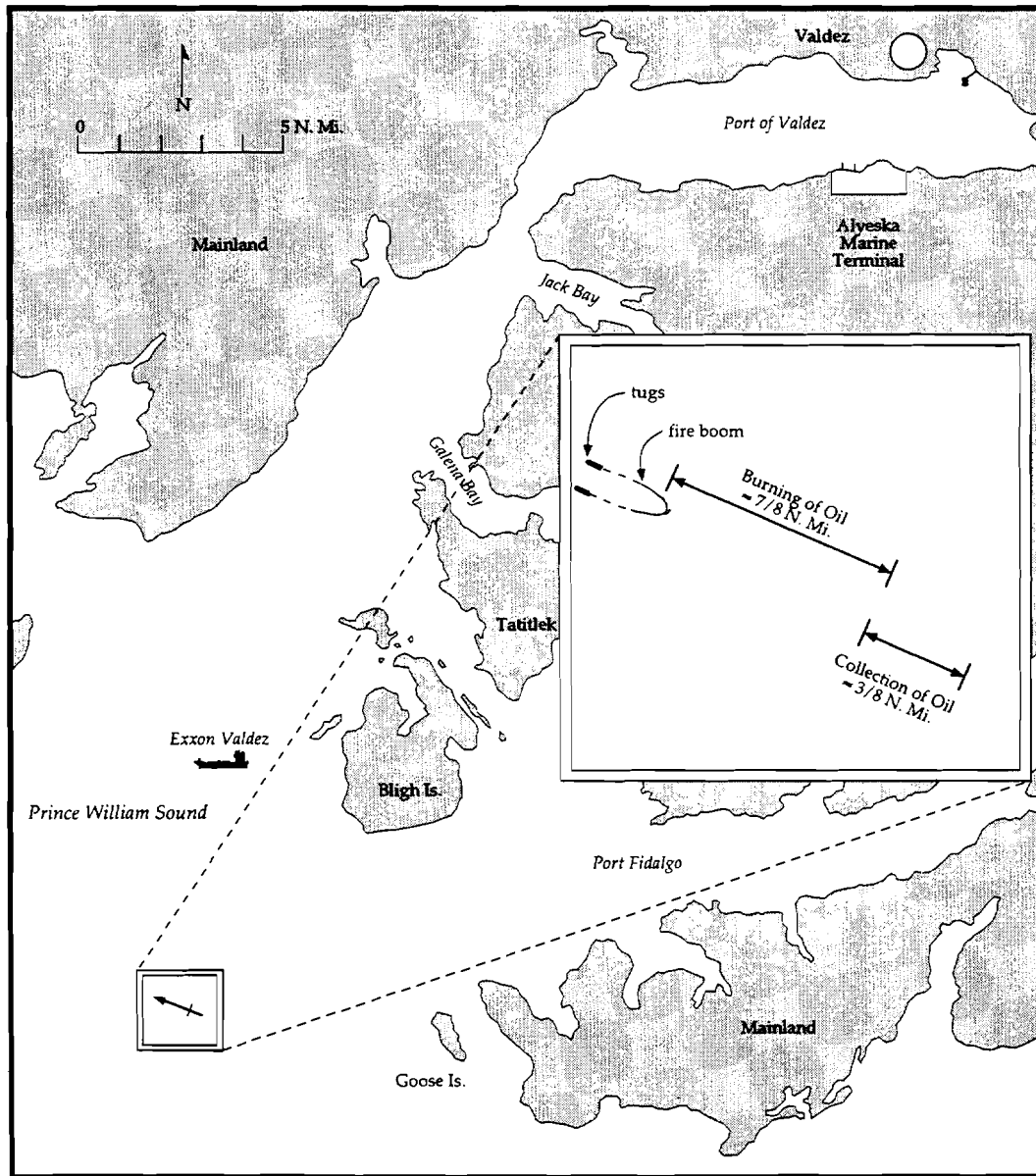


Figure 3.3. Location of in situ test burn on 25 March 1989.

Source: A. Alan, "Controlled Burning of Crude Oil on Water Following the Grounding of the Exxon Valdez," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 214.

59. USCG Pollution Report P 262200Z March 1989 (PWS Polrep 6), sec. (2)(A). The test was conducted at about 2045.

People in Tatitlek, a nearby village, expressed concerns about the effects of the smoke on pregnant women and the elderly.<sup>60</sup> Some residents temporarily left the village shortly after the incident, and there were demands that use of in situ burning be prohibited. While ADEC “promised to advise villagers of any further burning,” no formal attempt to halt the use of in situ burning appears to have been made.<sup>61</sup> Dennis Kelso, ADEC commissioner, later stated his view that Exxon could have continued to burn on the same permit, but according to his understanding, chose not to do so owing to other considerations.<sup>62</sup>

On Sunday, 26 March, representatives of the Coast Guard, ADEC, and Exxon viewed a videotape of the previous night’s test burn. Later in the day, the RRT pondered the results of the test, and those present felt encouraged. Plans were made to make further use of the in situ technology, especially as a means of controlling the leading edge of the slick.<sup>63</sup> On Sunday evening Exxon received the go-ahead for broader use of both dispersants and in situ burning.<sup>64</sup> That was at about the same time that winds were intensifying in the sound, churning and dispersing the oil, and rendering it, as later burn attempts would prove, practically non-combustible. A planned in situ burning, scheduled for 2100 was canceled “due to wind velocity.”<sup>65</sup>

Response planners did not, however, abandon the in situ burning strategy following the storm. On Tuesday, 28 March, small craft advisories continued, and cleanup work was largely forestalled. At mid-morning, Exxon requested a permit for in situ burning to be conducted in the vicinity of Eleanor Island, an area about fifteen miles southwest of Bligh Reef. A burn permit was issued with the proviso that the burn be conducted during daylight hours only.<sup>66</sup> The Regional Response Team declared that it would permit burning if “sufficient oil concentrations could be located and the fireproof burn boom could be gotten to the site.”<sup>67</sup> But the oil had been considerably emulsified, and now contained about 80 percent water.<sup>68</sup> Efforts to ignite this emulsion proved futile, and Exxon abandoned the strategy with little more than one very promising test burn having been accomplished.<sup>69</sup> On Friday, one week after the spill, Exxon declared, “Burning is no longer an option for removal.”<sup>70</sup>

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60. A. Davidson, *In the Wake of the Exxon Valdez: The Devastating Impact of the Alaska Oil Spill* (San Francisco: Sierra Club Books, 1990), 283–284. Davidson reports that “residents of the village of Tatitlek reported sore throats and stinging eyes from the smoke of Exxon’s first test burn.”

61. J. Lamming, “Spill Stench Permeates Aleut Village,” *The Anchorage Times*, 28 Mar. 1992.

62. D. Kelso (ADEC), interview by Dr. T. Leschine (FOSC staff), Seattle, 7 Nov. 1992, no. F742, notes, FOSC Exxon Valdez Archive.

63. R. Townsend and B. Heneman, “The Exxon Valdez Oil Spill: A Management Analysis” (prepared for the Center for Marine Conservation, Washington D.C., Sept. 1989), no. C1229, FOSC Exxon Valdez Archive, 176–177.

64. Cutter Information Corporation, “Contingency Plan Implementation and Cleanup,” 3. Exxon’s Iarossi was reportedly “almost jubilant” as he announced the approval of dispersants and in-situ burning. He appeared to feel that “for the first time real progress could be expected against the spill” (Alaska Oil Commission, 26).

65. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (2)(I).

66. USCG Pollution Report O 28230Z March 1989 (PWS Polrep 10), sec. (2)(D).

67. Townsend and Heneman, 177.

68. Cutter Information Corporation, “Contingency Plan Implementation and Cleanup,” 3.

69. NOAA Hotline 17, report 17, 29 March 1989. The report states that “burn trials in Herring Bay” failed when the oil could not be ignited. USCG Pollution Report O 292333Z March 1989 (PWS Polrep 12), sec. (1)(D), added that “burning operations in the area of Disc [sic] Island were not successful due to problems with igniting the oil.”

70. NOAA Hotline 17, report 22, 31 Mar. 1989.

Some observers have suggested that the *Exxon Valdez* and all of the oil in the water should have been “torched” in one massive blaze while the great mass of oil was still near the stranded vessel. This option was apparently never seriously considered. Frank Iarossi, president of Exxon Shipping, later declared:

The [torching] problem is, you’ve got a tremendous amount of fuel, a million barrels of oil, still in the tanker. When flames reached the tanker, you wouldn’t know what’s going to happen. That kind of fire is totally uncontrollable. I mean we could have blown away Tatitlek village and half of Prince William Sound.<sup>71</sup>

#### BOOMING, SKIMMING, AND OIL RECOVERY

Within the first hour following the grounding, workers were arriving at the Alyeska Terminal to mobilize for the initial deployment of boom and skimmer vessels. “Preparedness,” as defined in the Alyeska Oil Spill Contingency Plan, included having necessary equipment on hand, having trained and properly drilled personnel available, and having the means to initiate a response within a prescribed time period.<sup>72</sup> But the *Exxon Valdez* grounding resulted in a loss of oil which far exceeded anything previously experienced by Alyeska’s responders.<sup>73</sup>

Alyeska’s initial response did not begin smoothly. The 126-foot response deck barge that was normally preloaded with response equipment had been damaged during a recent storm. In preparation for repairs to the barge, the response equipment had been offloaded and temporarily stored ashore. The reloading of the barge proved difficult. The offloaded response equipment was difficult to locate under deep snow, and Alyeska could only muster one qualified person to operate both the forklift which brought equipment to the loading area and the crane which loaded it aboard the barge. It took Alyeska just over eleven and a half hours to deliver the equipment. The contingency plan had called for a five-hour delivery of response equipment.<sup>74</sup>

During the first few hours of the response, efforts to secure added equipment, personnel, and technical assistance began in earnest. At 0300 Alyeska began contracting with private vessels to augment the response force. Minutes later, Alyeska’s director of marine operations instructed his staff to begin “locating additional skimming equipment” from other area agencies. At the terminal, the decision to make lightering the first priority caused material-handling crews to focus on lightering hoses and fenders, rather than on oil containment gear. By dawn, the call for additional skimming equipment had gone to many parts of the globe, and a preliminary plan to divert spilled oil (through booming) to open water for skimmer recovery had been agreed upon. At 1010 the first vessel departed from the terminal, loaded with lightering equipment.<sup>75</sup>

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71. Davidson, 45.

72. The degree of preparedness at the terminal had been a matter of contention between the state and Alyeska. For additional background, including the historical development of the plan, the reader is directed to Alaska Oil Spill Commission, 37–59.

73. McCall, interview, 29 July 1991. Comdr. McCall observed that “only two people [himself and CWO Keith Darby] had ever seen 1,600 barrels of oil on the water before.”

74. National Transportation Safety Board, 145.

75. Alyeska Pipeline Service, 7–14.



The first containment boom arrived at the *Exxon Valdez* at 1454 on 24 March. The T/V *Exxon Baton Rouge* maneuvered into lightering position some five hours later (2010, 24 March). Exxon later directed that the two vessels be surrounded by boom, a task that was completed on Saturday, 25 March, at 1100.<sup>76</sup> The first skimmers arrived at the scene of the spill during the first day. But an ADEC observer noted that only two of the seven skimmers in the area were actually operating as of 1800. The small skimmer fleet ran into another problem later that evening. After recovering 210 barrels of oil (8,820 gallons), the vessels were filled to capacity. A means to offload recovered oil was not available, and until that could be provided, skimming operations were substantially slowed.<sup>77</sup>

Federal On Scene Coordinator McCall later observed that the first three days provided conditions that were very well suited for mechanical recovery of spilled oil, but (owing to calm seas) not very well adapted to use of dispersants.<sup>78</sup> By the close of the first day, supply reinforcements were arriving, but the three skimmers, twenty-five support vessels, and fifteen thousand feet of boom that had been deployed were making little headway.<sup>79</sup>

By the next morning, Saturday, 25 March, all available skimmers were operating on scene and conditions remained favorable.<sup>80</sup> The Regional Response Team held a teleconference late in the morning, and declared that mechanical recovery "was the best cleanup method" in view of conditions prevailing at the time. It was exceptionally busy in Valdez as hundreds began arriving and establishing operations. In the field, the size of the work force was growing as well. At the end of the day Exxon reported that the lineup now included six skimmer systems, fifty-six support vessels, and a total of twenty-six thousand feet of boom deployed against the spill. About 1,200 barrels of oil (50,400 gallons) were recovered on the busy (second) day.<sup>81</sup>

As the third day began, a vast array of vessels and equipment was reportedly en route to the spill area, including U.S. Navy Marco class V skimmer systems.<sup>82</sup> Additional skimmers were on their way from San Francisco and England. New supplies of boom were arriving, including more fire boom.<sup>83</sup> The perception was growing, however, that not enough was being done. Governor Cowper had concluded, a day earlier, that: "We simply don't have enough equipment to contain it. No one does. You couldn't contain it with all the equipment in North America." On Sunday, therefore, the governor declared the spill a state disaster, and pressed for increased levels of action. Many

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76. Ibid., 20. Alyeska had earlier asked if Exxon wished to boom the *Exxon Valdez* before the arrival of the *Baton Rouge*. Exxon declined, to the "surprise" of Charles O'Donnell, Alyeska's Terminal superintendent. Exxon again declined to surround the vessels with boom after the *Baton Rouge* was alongside, preferring, apparently, to wait till the next day. Comdr. McCall reported that the news media "killed everybody" until there was a boom around the vessels, "as though that was a magic band-aid" (McCall, interview, 29 July 1991).

77. Ibid., 23.

78. McCall, interview, 29 July 1991.

79. Alyeska Pipeline Service, 19-26. The document describes mechanical problems, filled-to-capacity skimmers, and boom deployment limitations which plagued the first day's efforts.

80. USCG Pollution Report P 260852Z April 1989 (PWS Polrep 5), sec. (1)(A).

81. Ibid., sec. (2)(F).

82. Both Alyeska and the U.S. Navy used sorbent belt skimmers manufactured by Marco Company which include Marco class V, class VII, and class XI skimmers. These were and are commonly referred to as "MARK V," "MARK VII," and "MARK XI" skimmers.

83. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (1)(D).

residents charged that the response effort to-date was showing little tangible progress. Exxon responded that, while it was aware of pressing time constraints, more time was needed to mobilize a full-scale response.<sup>84</sup>

Sunday began as another favorable day for skimming operations. It was calm, and the flotilla of skimmers and support vessels, a bit larger than the previous day, collected another 2,275 barrels of oil (95,500 gallons). A late evening report revealed that thirteen skimmer systems were projected to be in operation during the following day. But the same report noted that "northeast winds in the Valdez Arm have increased to 25 KTS [knots] with some higher gusts."<sup>85</sup> Those winds proved to be the first signs of the storm which, during the next several hours, caused drastic changes in recovery conditions.

No mechanical recovery of oil took place on 28 March, as work boats and skimming vessels took refuge in areas sheltered from the storm.<sup>86</sup> In several locations, booming, including that placed around the *Exxon Valdez* and the *Baton Rouge*, lacked the strength to remain in place during the storm.<sup>87</sup> Other than to continue the supply and equipment buildup, and to strategize about how to resume the cleanup when the storm subsided, there was little that could be accomplished.

When the storm began, most of the spilled oil remained within a few miles of the vessel, in basically a recoverable form. Afterwards the leading edge extended over forty miles from the vessel, and by 30 March it had moved ninety miles. Portions of the oil were no longer afloat. Instead, it had stranded on the shorelines of at least a dozen islands generally on a path past Knight Island and leading towards the Gulf of Alaska.<sup>88</sup> In its now emulsified form, the oil that remained afloat was more difficult to handle. It not only clogged skimmers, but much of what was recovered included seawater.<sup>89</sup> This added volume to the recovered product, with implications for storage and transport of the recovered product as well. The cleanup had become infinitely more complicated following the heavy weather in Prince William Sound on 26–27 March.

As winds subsided, floating oil recovery operations were deployed to new stations. Thirteen skimmers were being deployed as the first week of the response came to a close, with three U.S. Navy Marco class V systems reported to be en route. Of those present, four were stationed in the vicinity of the *Exxon Valdez* (for contingency purposes).

As the oil spread, local fishermen and state personnel began working to protect fish hatcheries in Prince William Sound. The largest of these efforts became known as the "battle for Sawmill Bay." The protection of hatcheries was ultimately successful, but

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84. B. Dietrich, "Anger, Frustration in Valdez," *The Seattle Times/Seattle Post-Intelligencer*, 26 Mar. 1989, sec. A.

85. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (1)(F).

86. USCG Pollution Report O 280230Z March 1989 (PWS Polrep 8), sec. (1)(B).

87. USCG Pollution Report O 290920Z March 1989 (PWS Polrep 11), sec. (2)(C). The Polrep states that booming around the tanker is being replaced.

88. USCG, "Beach Clean Up Methodology," 31 Mar. 1989, no. C202, FOSC Exxon Valdez Archive. The spill covered "500 square miles of Prince William Sound," according to the report.

89. Weir skimmers, float-borne devices with gravity intakes, were reported by 31 March to be experiencing clogging problems "as the oil became more viscous." Weirs were considered to be among the more heavy duty gathering devices.

the effort required several miles of oil boom. At Sawmill Bay, a total of 59,100 feet (just over 11 miles) of sorbent and containment boom was employed.<sup>90</sup>

By the first of April, all skimming resources had been repositioned at the intersection of Knight Island Passage and Montague Strait. Exxon reported that it had 41,000 feet of sorbent boom, and 43,000 feet of various other types of boom deployed, and 86 contract vessels, 13 skimmers, and 2 tank barges for receiving and transporting recovered oil on scene.<sup>91</sup> Despite Exxon's continued acquisition of equipment and work force, there was continuing unhappiness with the pace and progress of the response. The FOSC reported that "federal, state, and local agencies [were] still exerting pressure on Exxon to bring in sufficient skimming and sorbent booming supplies to protect sensitive areas and collect oil."<sup>92</sup> A notice to mariners instructed vessels not involved in oil recovery to stay away from patches of floating oil.<sup>93</sup>

A 3 April report showed that nine of the twelve skimmers at work in the response were working from a Snug Harbor (southeastern Knight Island) location. The others were stationed below that area, at Point Helen, Latouche Pass, and Sawmill Bay (figure 3.4). The total amount of boom deployed had reached 111,000 feet, and Exxon reported that it had about 35,000 additional feet of boom on hand or en route (figure 3.5).<sup>94</sup> The early days in April provided "optimal conditions for boom and skimmer operations," and crews reported "90 PCT [percent] boom efficiency." With the arrival of added equipment, storage of recovered oil was far less a problem. The ratio of water to oil in recoveries ranged from 50:50 to as high as 80:20.<sup>95</sup> It was becoming difficult to make accurate estimates regarding how much oil was actually being recovered, and the matter fell into some dispute. Between 3 April and 6 April, however, the Coast Guard estimated that fifteen thousand barrels of oil had been recovered, after decanting.<sup>96</sup>

As supplies of boom increased, a strategy that was sometimes used involved impounding oil within embayments or other sheltered areas. This kept the oil in comparatively calm areas until it could be collected by recovery teams, and may have lessened the burden on spotter aircraft and recovery vessels to follow sheens that might otherwise be flowing from the same oil masses.<sup>97</sup>

Exxon continued to bring new skimming equipment into the response area (figure 3.6). In mid-April the first skimmers began to appear in Gulf of Alaska locations, and the total number of major skimming vessels peaked with over fifty at work. During most of the period between April first and the middle of May, about two-thirds of all skimmers were stationed within Prince William Sound.<sup>98</sup> When recoverable amounts of floating oil were found, support vessels, working in pairs, would corral the oil and deliver it to skimmers. The M/V *Krystal Star* was established as a control point for

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90. Exxon, "Valdez Oil Spill Technology 1989 Operations," 31.

91. USCG Pollution Report O 010737Z April 1989 (PWS Polrep 17), sec. (1)(C).

92. USCG Pollution Report O 020555Z April 1989 (PWS Polrep 19), sec. (1)(E).

93. USCG Pollution Report O 012320Z March 1989 [sic] (PWS Polrep 18), sec. (2)(L).

94. USCG Pollution Report O 030627Z April 1989 (PWS Polrep 21), sec. (1)(H).

95. USCG Pollution Report O 040730Z April 1989 (PWS Polrep 23), sec. (1)(B).

96. USCG Pollution Report O 061020Z April 1989 (PWS Polrep 27), sec. (1)(D).

97. USCG Pollution Report O 062325Z April 1989 (PWS Polrep 28), sec. (3)(J).

98. Exxon, "Valdez Oil Spill Technology 1989 Operations," figures 20 and 34.

skimming operations, early in April. There, liaison was maintained with aircraft conducting overflights, and it was possible to dispatch promptly skimming teams whenever new sightings were made.<sup>99</sup>

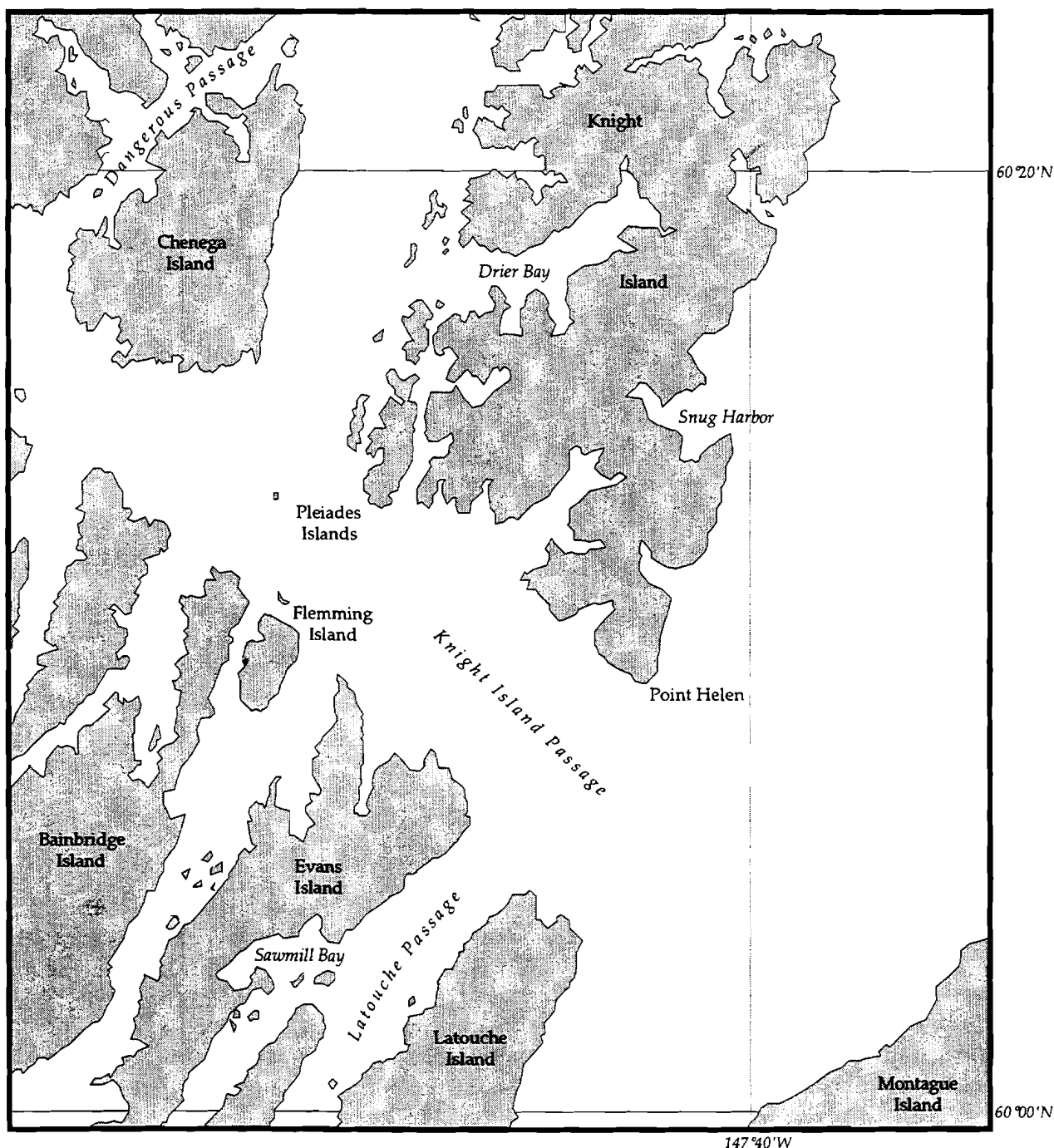


Figure 3.4. Southern Prince William Sound area showing Snug Harbor, Point Helen, Latouche Passage, and Sawmill Bay.

99. NOAA Hotline 17, report 32, 9 Apr. 1989.

Oil was moving well out into the Gulf of Alaska (with the leading edge 250 miles from Bligh Reef on 11 April) and overflights were reporting that the main flow was a “20 to 30 mile sheen with widely separated areas of mousse.” The leading edge now seemed to be stagnating, and NOAA suggested that the oil was now forming into small tarballs.<sup>100</sup> Tarballs, which are evidence of advanced weathering, are very difficult for air surveillance personnel to track.

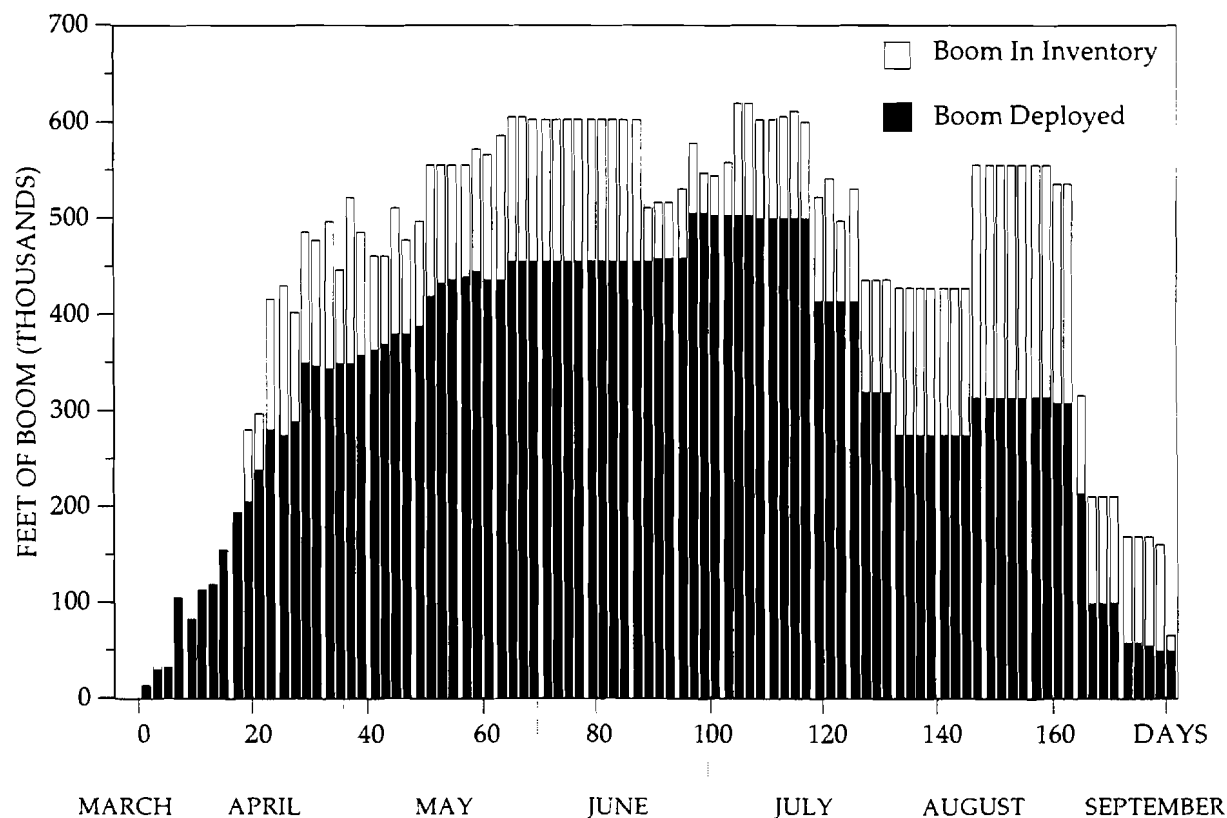


Figure 3.5. Amount of boom (containment and sorbent) inventoried and deployed by Exxon from March to September 1989.

Source: Reproduced with permission from Exxon Co., USA.

In mid-April, a communication from Exxon declared that: “The current [oil recovery] fleet, and natural weathering is making a marked reduction in the amount of surface oil each day. The surface oil recovery operation in Prince William Sound should be of relatively short duration, other than small tidy up actions, using local small craft.”<sup>101</sup> While equipment was now quite sufficient, the oil had weathered to a point where what remained was very, very difficult to recover. By late April Exxon was estimating that “17% [of the spilled oil was] recovered, 53% weathered or evaporated or

100. USCG Pollution Report O 100821Z April 1989 (PWS Polrep 35), sec. (1)(A).

101. O. Harrison (Exxon), letter to Adm. P. Yost, 15 Apr. 1989, no. C260, FOSC Exxon Valdez Archive. Polreps support Mr. Harrison’s contention regarding weathering of oil. Recovery crews were reporting increased difficulty in pumping thickening oil on almost a daily basis.

biodegraded, 18% impacted the shorelines...8% is on the water in PWS, and 4% is on the water in the Gulf of Alaska."<sup>102</sup>

The month of May saw a continuing decline in the productivity of floating oil operations. Production reports for May showed that while twenty to thirty skimmers were in the field, vessel recovery rates were often five barrels or less per day. On a few days, particularly late in the month, field reports indicated "no operations" or "no recovery reported." May can be characterized as a month when there were many looking for oil, but little occurring in the way of oil recovery. Meaningful floating oil recovery operations were, for all practical purposes, finished.<sup>103</sup>

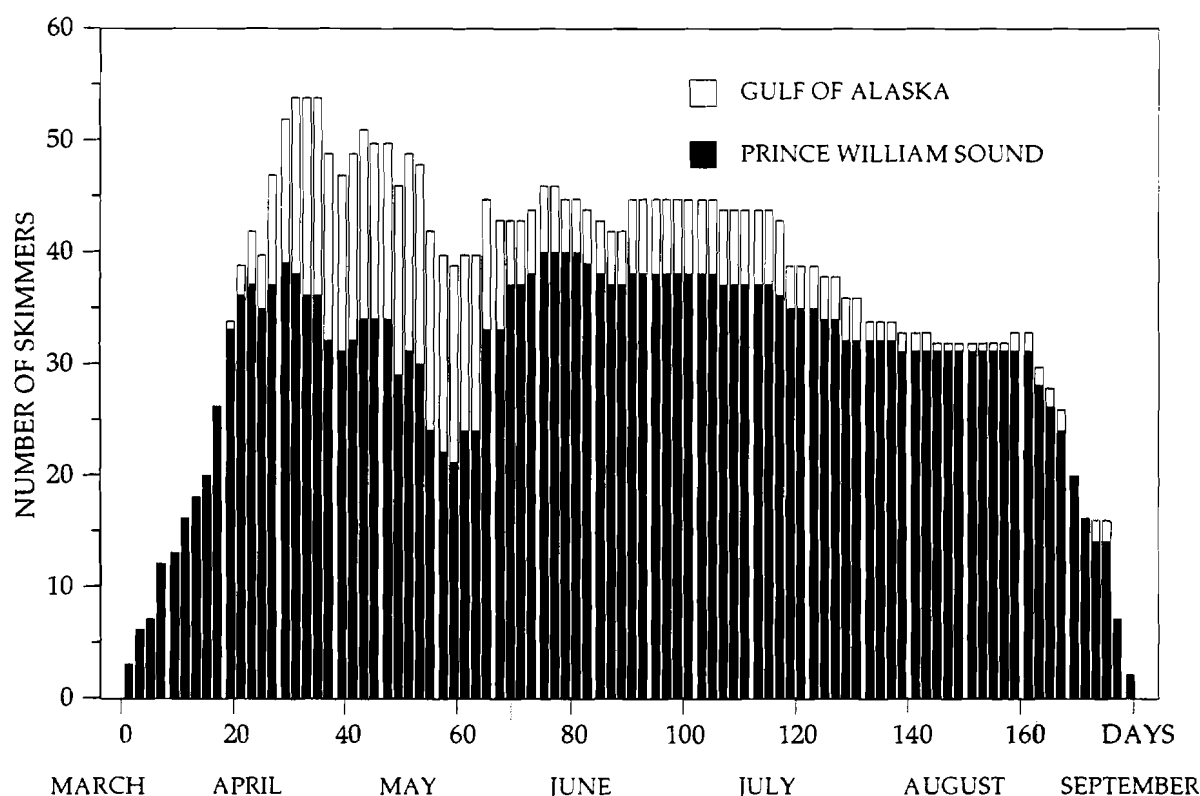


Figure 3.6. The number of skimmers deployed by Exxon from March to September 1989.

Source: Reproduced with permission from Exxon Co., USA.

### TRACKING FREE-FLOATING OIL

An important component of planning for free-floating oil operations was the tracking, mapping, and forecasting of flow trajectory. Those operations were initiated by the National Oceanic and Atmospheric Administration (NOAA) on 24 March, the day of the spill. National Oceanic and Atmospheric Administration scientists collected data to

102. NOAA Hotline 17, report 50, 24 Apr. 1989.

103. J. Robinson (NOAA) and B. Flint (ADEC), letter to Vice Adm. C. Robbins, 22 May 1989, no. C186, FOSC Exxon Valdez Archive. In the letter the two agency representative spokesmen declared: "We are in general agreement that very little floating oil remains in the area."

forecast the spill's trajectory and environmental impact, and were soon able to construct a computer model for the spill. In addition to regular NOAA flights, daily aerial observations were made by the Coast Guard, ADEC, and Exxon.<sup>104</sup> Information collected during flights was inputted to NOAA's model and shared on daily NOAA-produced summary maps.<sup>105</sup>

On an average day, unless adverse weather limited flight operations, several flights were made to observe the latest oil movements, and to determine if new problems were beginning to develop. Flow-tracking flights diminished in the Prince William Sound area, beginning in mid-April, and were reduced in mid-May over the Gulf of Alaska as well (in each case because of diminished amounts of free-floating oil in the area). A general overflight program was maintained throughout the summer, however, even after floating oil operations ended.<sup>106</sup>

Both the Coast Guard and Exxon used ultraviolet/infrared (UV/IR) tracking systems, that provided information on the approximate thickness of floating oil, in addition to its location. Ultraviolet/infrared systems helped to identify the heaviest concentrations of oil, and thus were instrumental in planning the deployment of work resources. Although the systems were limited to daylight use, they provided more timely data than did other systems, and they were not subject to other limitations that impaired satellite and airborne radar systems. Exxon employed a UV/IR imaging system developed by Esso Resources Canada, Ltd., while the Coast Guard's system (Air-Eye) used a scanner.<sup>107</sup>

Satellite imagery was tested as a means of tracking the movement of oil in the response area. It did not prove particularly helpful for several reasons. First, the satellite passed over the response area only once every eight days. If conditions happened to be overcast during its overpass, the satellite was unable to return useful images. Even when all conditions were favorable, it took about forty-eight hours to process and distribute the data. This was not a sufficiently timely return to permit meaningful planning.

## HATCHERY PROTECTION

One of the first priorities in the response was to protect potentially vulnerable fish hatcheries. This was accomplished through placement of protective booming, blocking the flow of oil into the most vital hatchery areas.

The NCP provided the FOSC little guidance on fishery related issues. The FOSC must turn to the NOAA scientific support coordinator (SSC) for assistance in assessing potential impact or the value of a particular course of action (40 CFR 300.145 [d]).

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104. S. Christopherson et al., "Exxon Valdez Oil Spill" (report documenting NOAA's response from March 24-September 20, 1989) Feb. 1990, ed. L. Harris, no. W1947, FOSC Exxon Valdez Archive. NOAA reported that over one hundred of its electronically produced oil position maps were distributed daily to interested parties both in the spill area and in various other parts of the nation.

105. Exxon, "Valdez Oil Spill Technology 1989 Operations," 19.

106. Ibid.

107. Ibid., 21.

The U.S. Department of Commerce, through NOAA, provides scientific support and expertise on living marine resources (40 CFR 300.175 [b](7)). However, the principal agency with regulatory responsibility for commercial and sport fishing stocks in the spill-affected area is the Alaska Department of Fish and Game (ADF&G). This state agency played a vital role in assisting the response effort in dealing with fishing related issues.

#### COMMERCIAL FISHING IN THE RESPONSE AREA

Four Alaska commercial fishing regions are in the spill impacted area. These include the Prince William Sound area (which actually includes some Gulf of Alaska territory outside the sound proper), Cook Inlet, the Kodiak region, and the Chignik area, located west of Kodiak.<sup>108</sup> Portions of each of these areas were at risk (especially in 1989), though the degree of risk varied substantially.

The spill area's fishing regions account for about one third of Alaska's salmon production. Of the spill area's four zones, Cook Inlet has been the most productive commercial harvest area in recent years, more than doubling totals at Kodiak, and tripling Prince William Sound levels. Chignik is a smaller fishery, generating less than 3 percent of Alaska's total salmon harvest. Sockeye salmon are the most economically important spill-area product, with about 37 percent of the Alaska catch coming from the four spill-impacted zones.<sup>109</sup> Pacific herring, along with herring roe (eggs), are another important harvest product. In 1988 the Prince William Sound herring fishery produced a ten thousand ton harvest, worth about \$12.2 million.<sup>110</sup> Nearly six thousand people earn their livelihood in Prince William Sound fishing enterprises.<sup>111</sup> (About 8–9 percent of Alaska's fishing work force.)

#### PROTECTING FISH HATCHERIES

With lightering, salvage, and skimming operations underway, hatchery protection became the next priority. Discussions about hatchery protection were begun on Saturday afternoon, 25 March (the second day of the response). Exxon authorities met with local fishermen, representatives from the fishing industry, and persons from the village of Tatitlek (a subsistence community). The Cordova District Fishermen United (CDFU) organized more than forty boats to assist in resource protection projects, and Exxon declared that it would begin boom deployment late Saturday or early Sunday. At the time, Exxon had about four miles of booming ready for placement.<sup>112</sup>

108. ADF&G, "Alaska Salmon Management Areas," no. F746, FOSC Exxon Valdez Archive.

109. ADF&G (Div. of Commercial Fisheries), "Very Preliminary Harvest and Exvessel Price Data" (for 1992 salmon season, 30 Sept. 1992), no. F753, FOSC Exxon Valdez Archive. (Carries notation: NOT FOR USE FOR ANY LEGAL INTERPRETATIONS.)

110. "Exxon Valdez Oil Spill: The First 8 Days," *Alaska Fish and Game* 21 (July-Aug. 1989): 11. Roe are typically gathered through extraction from natural spawning areas (spawn on kelp), an artificial spawn procedure (pound spawn on kelp), and through direct removal from the fish's membrane (sac roe).

111. T. Egan, "Fishermen Fear Spill Will Hurt Into The 90's," *The New York Times*, 28 Mar. 1989.

112. Cutter Information Corporation, "Largest Oil Spill In U.S. History Strikes Alaskan Coast," *Oil Spill Intelligence Report* 12 (3 Apr. 1989): 1.



Hatchery protection became the number one priority of this group, and they were supported by Exxon and the FOSC in the task.<sup>113</sup>

The Alaska Department of Environmental Conservation joined the CDFU hatchery protection project, and on 28 March it was formally underway. Precisely who was “in charge” of the effort is dependent upon one’s vantage point. *The New York Times* reported that fishermen and the state were “taking charge” of the hatchery protection effort, “We had to take things into our own hands,” declared Jack Lamb, a spokesman for Prince William Sound fishermen.<sup>114</sup>

Cordova fishermen thus launched the “mosquito fleet” as it came to be called. Many of them had no previous experience with oil containment boom, but they brought willing spirits, and a valuable knowledge of the area. Most proceeded to the hatcheries, but a few went “here and there,” placing protective booming in favored fishing locations. Problems surfaced. Booming did not feature compatible coupling devices, or the type of boom which was expected was not delivered, leading to accusations that “Exxon...[is] lying to us.”<sup>115</sup>

#### HATCHERY DEFENSE PRIORITIES

The first hatcheries designated for protective measures were located at Main Bay, Port San Juan, and Esther Bay, all located along a roughly north to south line, along the western side of Prince William Sound (figure 3.7). Later, one more Prince William Sound hatchery (McClure Bay) and two Gulf of Alaska facilities (Tutka Bay and Kato Bay) were added to the list. Located in a particularly vulnerable Evans Island site, the Port San Juan facility was the scene of the most extensive booming and protective project. (The hatchery at Port San Juan was the Armin F. Koernig Hatchery. It was commonly referred to as the “Sawmill Bay hatchery.”) Boom was positioned at Main Bay on 29 March, while substantial progress at booming Sawmill Bay was reported on the next day.<sup>116</sup>

One of the designated crucial resources was not a hatchery. Eshamy Bay, which was considered a vital natural spawning area for sockeye salmon, was also given priority protection status.

Two other hatcheries are found in Prince William Sound. Cannery Creek, a state of Alaska facility, and Salmon Gulch, owned by the Valdez Fisheries Development Corporation, both located in the extreme northern reaches of the sound, were not considered to be threatened.

The Sawmill Bay/Port San Juan project was the most extensive, and probably the most dramatic of the hatchery protection efforts. A 2 April report described a complex

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113. Comdr S. McCall, interview by Lt. Comdr R. Gaunt and BM1 R. Travis, Anchorage, 21 Apr. 1992, no. F672, tape, FOSC Exxon Valdez Archive.

114. T. Egan, “Fishermen and State Take Charge of Cleaning Up Alaska Oil Spill,” *The New York Times*, 29 Mar. 1989.

115. McCall, interview, 21 Apr. 1992.

116. USCG Pollution Report O 290920Z March 1989 (PWS Polrep 11), sec. (2)(E); and USCG Pollution Report O 302253Z March 1989 (PWS Polrep 14), sec. (1)(E).

network of booming that had been placed, and considerable efforts to maintain the protective booming emplaced at the site (figure 3.8).<sup>117</sup> The fifteen to twenty boats that supported the project were repositioning anchors, monitoring conditions, replacing damaged segments, and opening and closing the network for vessel transits.<sup>118</sup>

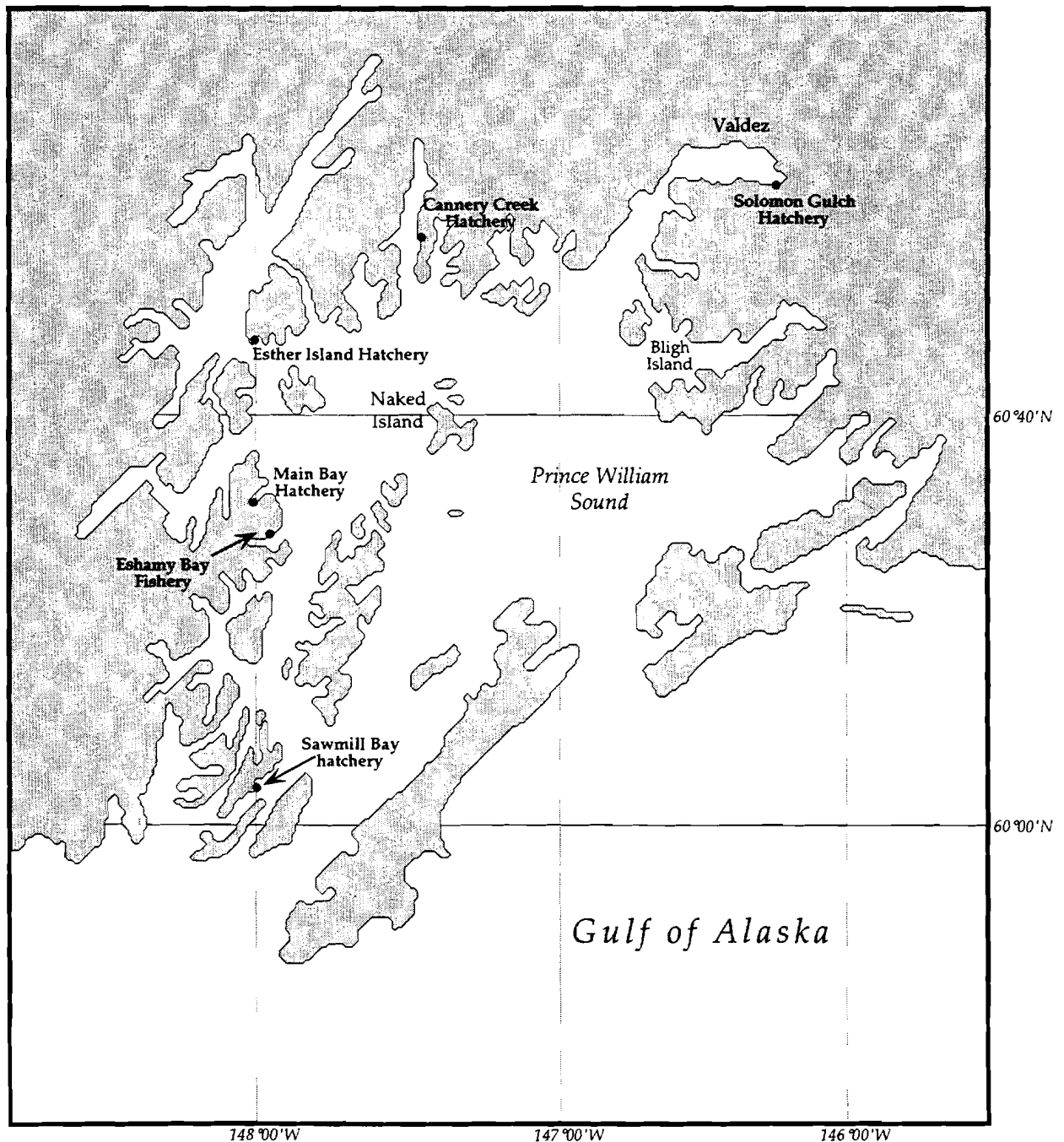


Figure 3.7. Selected fisheries and hatcheries in Prince William Sound.

Source: Reproduced with permission from Exxon Co., USA.

117. USCG Pollution Report O 032248Z April 1989 (PWS Polrep 22), sec. (1)(B).

118. Exxon, "Valdez Oil Spill Technology 1989 Operations," 31.

Operations at the site came to be referred to as “the battle for Sawmill Bay.” It was a battle that had its ups and downs.

Small amounts of oil appeared to be seeping under the outermost booms at Sawmill Bay, and those familiar with the area worried that stormy conditions might permit floating oil to sweep into the inner reaches of the hatchery area. (Other portions of Evans Island, where Sawmill Bay is located, were heavily impacted as of early April.) Heavy duty sea boom was needed. More money would be required. The Prince William Sound Aquaculture Corporation (PWSAC), builders and owners of the non-profit facility, worried about its fate. An Exxon official, learning of the dilemma, arranged a meeting between Aquaculture Corporation’s president, Bruce Suzomoto and Exxon’s Frank Iarossi.<sup>119</sup>

President Suzomoto informed Iarossi of the pressing need for additional protective booming. Exxon would work on the matter, said Iarossi. Asked if there were other needs, Suzomoto responded, “About \$2 million.” Iarossi excused himself, was absent for about ten minutes, and returned. He then handed Suzomoto a business card with the figure “\$1 million” written on the back. “That’s my personal guarantee,” he informed the PWSAC president. On 3 April that amount was transferred to a PWSAC account. The funds were used to protect hatchery resources, including the one at Esther Island, the world’s largest fish hatchery.<sup>120</sup>

Reinforced with budgetary vigor, Prince William Sound fishermen continued hatchery protective battles. On 4 April, 50,000 feet of protective boom was emplaced at Sawmill Bay, and on scene resources included 15 vessels, 2 U.S. Navy skimmer systems, 2 other skimming devices, a 30,000 barrel tank barge, and the M/V *Krystal Star*, an Exxon on scene command vessel. Esther Island, apparently out of range of the oil flow, nonetheless, had three thousand feet of boom positioned. Eshamy Bay had five thousand feet of boom, a vessel, and a skimmer. Main Bay was protected by seven thousand feet of boom with tenders.<sup>121</sup> Just four days later Exxon declared that the “defensive portion of the response has been a success.” The report continued, “[Hatcheries] although not yet considered safe are much less threatened than previously.”<sup>122</sup>

The arrangement at Sawmill Bay ultimately involved several layers of boom deployed in series (figure 3.8). If an outer area were to be penetrated, skimming vessels would intercept the oil before it could reach the next barrier. At each stage vessels were stationed with sorbents and other measures to stop the oil flow. Outside the immediate area of the hatchery, deflection boom was sometimes used to divert current flow, thereby reducing the threat of oil reaching even the outer barriers. The basic protection principles used at Sawmill Bay were deployed elsewhere as well.

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119. R. Anderson, “Exxon Aids Hatchery In Fighting Oil Slick,” *The Seattle Times*, 4 Apr. 1989, sec. B.

120. *Ibid.*

121. USCG Pollution Report O 040730Z April 1989 (PWS Polrep 23), sections (1)(A)(3) and (1)(A)(4).

122. USCG Pollution Report O 080118Z April 1989 (PWS Polrep 30), sec. (1)(D).

Less than three weeks after the response had begun, it seemed that the major portion of the hatchery protection battle had been won. On 12 April ADEC Commissioner Dennis Kelso declared that "we are entering a new phase" of the response. It was time, he believed, for the emphasis to be shifted to shoreline cleanup.<sup>123</sup> Although the hatcheries continued to need attention, and though minor crises would periodically arise, major defenses were considered to have been successfully established.

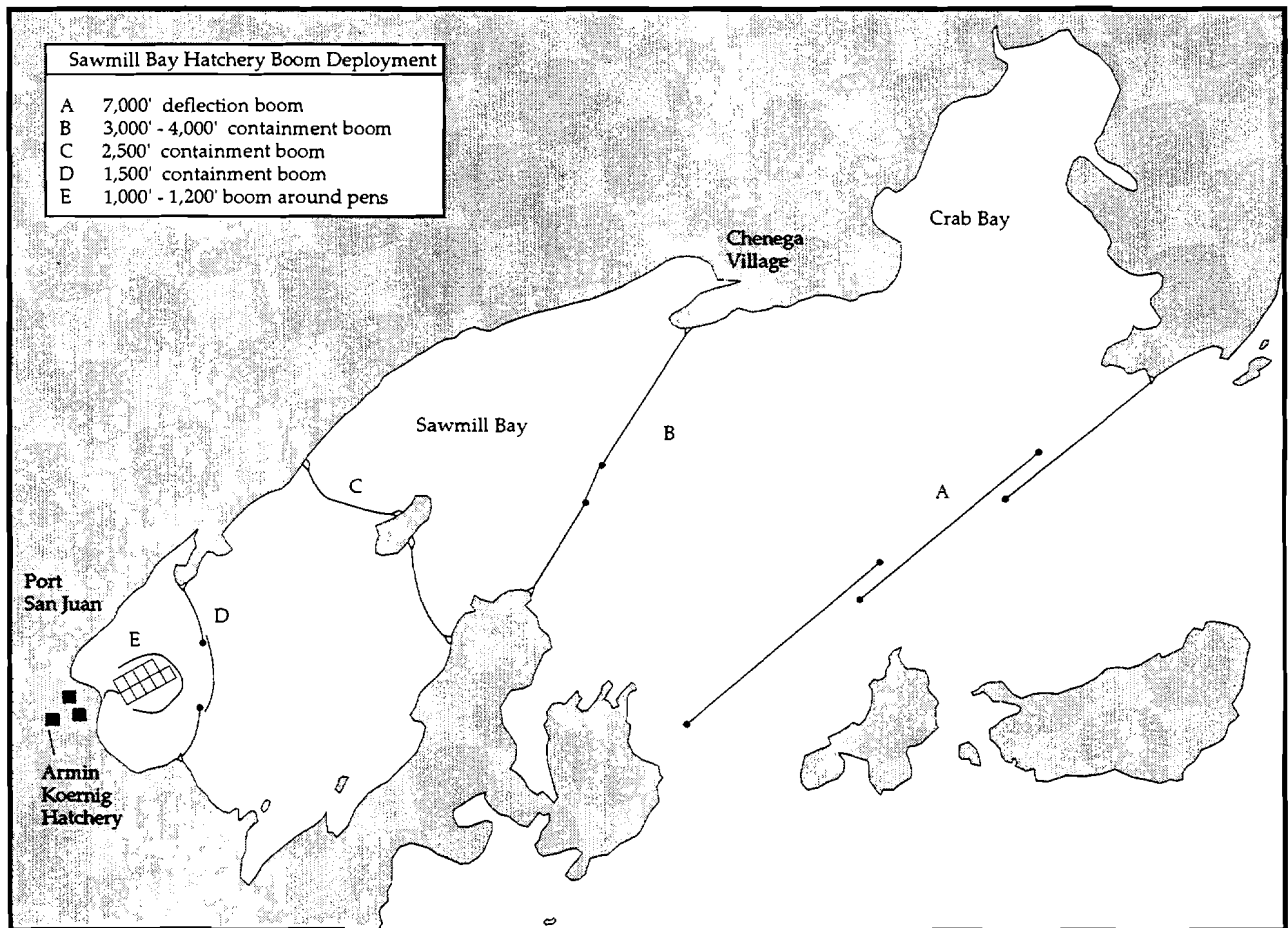


Figure 3.8. Sawmill Bay hatchery boom deployment.

Source: Reproduced with permission from Exxon Co., USA.

#### WESTERN ALASKA OPERATIONS

As oil moved from Prince William Sound into the Gulf of Alaska, it threatened other hatcheries. Coast Guard authorities in Anchorage, where Captain Rene Roussel, chief of MSO Anchorage, had assumed western Alaska FOSC authority, instituted fisheries resource protection measures on 4 April. Initial efforts involved boom handling and training sessions for fishermen in areas expected to be impacted. Additionally, USCGC *Storis* was tasked with transporting protective boom to Afognak Island (figure 3.9) a major salmon spawning area.<sup>124</sup> On 11 April, protective operations at Tutka Bay,

123. "Exxon Valdez Oil Spill: The First 8 Weeks," *Alaska Fish and Game*, 13.

124. WAK Polrep 5, sec. (I)(C).

located near Homer, had been established. Although twenty-one hundred feet of boom were in place at Tutka Bay, there were indications of supply shortfalls. The strategy being used at Tutka Bay involved the use of herring netting. The netting was used in

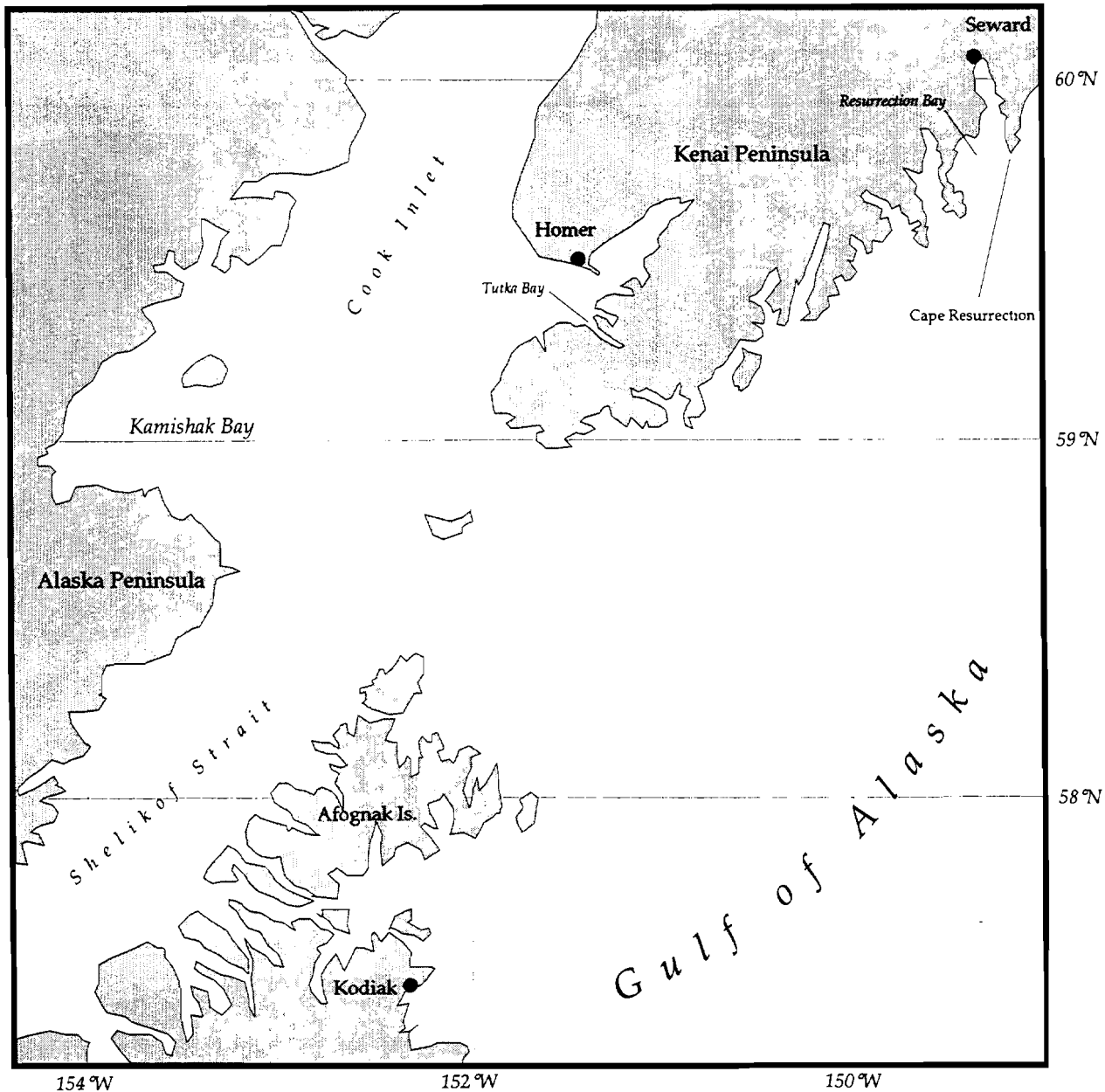


Figure 3.9. Map of the Gulf of Alaska area showing Kodiak and Afognak islands, Tutka and Resurrection bays, and Cape Resurrection.

an attempt to “break up” floating masses, making them more readily recoverable by skimmers. Booming material was on its way to Kitoi Fish Hatchery, at Afognak Island.<sup>125</sup>

125. USCG Pollution Report P 110230Z April 1989 (WAK Polrep 8), sec. (2)(C).

To compensate for shortages of boom, fishing vessels were loaded with ten thousand feet of boom, then stationed at locations which might need protection. The idea was to provide mobile response capabilities, and to permit quick deployment of scarce resources into places with developing needs. This was thought to be the best method of deploying boom in those places where it was most needed. Approximately thirty-six fishing vessels were involved in these operations, centered near Cape Resurrection.<sup>126</sup>

By 13 April, the only western Alaska area reported to be boomed was the Tutka Bay Fish Hatchery. Additional boom was being assembled both ashore and aboard vessels. In the meantime, Exxon had authorized the fabrication of over two miles of log boom, thus initiating a brisk local industry (at Homer) which ultimately generated approximately fifty thousand feet of booming apparatus.<sup>127</sup>

Both the Tutka and Katoai Hatcheries were soon provided with protective booming. A vigil was maintained at each location in anticipation of floating oil penetrations. Perhaps because the oil was weathering, and was now most likely to be found in the form of mousse or tarballs, there were few incidents where western Alaskan hatcheries were genuinely imperiled. On 25 April at Katoai Bay "small mousse patches that passed over outer booms during swells" were intercepted by fishing vessels using sorbent materials. A similar challenge arose on 2 May at the same location. The penetration came nowhere near the inner, and most sensitive portions of the hatchery.

The threat from floating oil diminished as the days passed. In mid-May, fishing vessels patrolling the outer reaches of the western Alaska area asked to be released.<sup>128</sup> Activity reports during the month of May reveal steadily diminishing levels of skimming and other floating oil operations. By 1 June, floating oil operations were largely discontinued.<sup>129</sup> The dangers to fish hatcheries, both in Prince William Sound, and in western Alaska, had largely passed.

Protective booming remained in place at hatcheries throughout the summer months. There were no incidents where inner hatchery areas were penetrated by floating oil. Although contingency arrangements had been made for the evacuation of fry, these measures were never employed. In September, in conjunction with demobilization, protective booming was recovered from fish hatcheries.<sup>130</sup>

On 15 September, Alaskan Governor Steve Cowper announced the "State of Alaska Winter Oil Spill Plan." One component of the plan specified continued protection of fish hatcheries. Objectives included placement of booming capable of withstanding wintertime conditions, and a twenty-four-hour communications network which would permit rapid response for emergency conditions that might develop.<sup>131</sup>

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126. *Ibid*, sec. (1)(D).

127. USCG Pollution Report P 130241Z April 1989 (WAK Polrep 10), sec. (1)(F).

128. USCG Pollution Report O 152040Z May 1989 (WAK Polrep 43), sec. (2)(A).

129. Exxon, "Valdez Oil Spill Technology 1989 Operations," 9.

130. *Ibid*, 31.

131. ADEC, "State of Alaska Winter Operations Plan 1989-1990," 15 Sept. 1989, no. C2305, FOSC Exxon Valdez Archive. The plan also featured a shoreline survey program, scientific studies, waste management, public affairs and shoreline treatment components. It did not propose an independent operation. Instead, it called for coordination and cooperation with both the Coast Guard and Exxon.

The motivation for the state's program was that oil, dislodged from shorelines by winter storm action, might threaten hatcheries and other critical resource areas. Exxon was not receptive, declaring the program to be both unnecessary and unreimbursable. Exxon's Otto Harrison was, however, open to assisting in the costs of a permanent communications system for state hatcheries.<sup>132</sup>

The winter hatchery protection system thus relied upon a combination of monitoring and Exxon's vessel-based contingency response capabilities. No encroachments of floating oil were experienced. When summer operations resumed in 1990, hatcheries were not boomed.<sup>133</sup>

## EQUIPMENT AND TECHNOLOGIES

A great diversity of equipment and technology were employed during the floating oil phase of the response. The diversity was in large part due to the sheer size of the spill. Many skimmers and skimming types were sought. Likewise, boom of all descriptions was needed. As time went on, spill managers were better able to identify what equipment was needed and worked best in which application. This section describes some of the more prominent pieces of equipment and types of technology used during floating oil operations.

### SKIMMERS IN THE RESPONSE

Skimmers were the primary floating oil recovery devices used in the *Exxon Valdez* response. Exxon reported that it eventually had on scene 266 different skimming units (though not all of them made it into service during the response). There were four main categories of skimmers: weirs, suction devices, paddle belts, and sorbent surface skimmers. When only "major skimmers" are considered, the peak of activity (late April) saw fifty-four units being utilized.

Weir skimmers have an oil intake opening just below the surface. Some have paddles that rotate beneath the surface and move oil towards the intake opening. After oil enters the opening, it is drawn, by auger or by suction, to a collection tank. Exxon's equipment roster included fifty weir skimming devices of various types and manufacture. Weir skimmers did very well during the earliest days of the spill, but were among the first to become clogged and ineffective as the oil weathered.

Twenty-one suction-type skimmers were used in the response effort. These employed a vacuum principle, with a floating suction head just below the surface. Suction skimmers encountered problems as mousse formed. The weathered oil would no longer pass through the head openings. Twelve paddle-belt skimmers were present, including one of a somewhat unique design that was furnished and manned by the Canadian Coast Guard. Paddle skimmers feature paddles attached to a conveyor belt.

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132. O. Harrison (Exxon), letter to S. Provant (ADEC), 10 Oct. 1989, no. W23, FOSC Exxon Valdez Archive. Harrison also offered to provide training "of hatchery employees," but saw other features of the proposal as duplicative.

133. M. Kuwada (ADF&G), interview by Lt. Comdr. R. Gaunt, Anchorage, 13 Feb. 1993, no. F760, notes, FOSC Exxon Valdez Archive.

The belt is rotated within the oil pool, and the recovered oil is conveyed to a settling tank, later to be removed to a transfer vessel, or otherwise offloaded when the vessel returns to port. Twelve paddle belt skimmers were to be found in the 1989 response fleet.

An additional 119 devices consisted of an assortment of contrivances that moved discs, belts, or mops through the oil slick, then extracted the collected product through wringers or scrapers. The U.S. Navy Marco class V skimmers employed sorbent belts for the collection of oil. Disc skimmers were helpful in good conditions, but were vulnerable to problems when oiled debris was added to the floating oil.

Another mode of collection that was tried on a limited basis was the use of dredges. Dredges are designed, not for skimming operations, but instead for maintenance of harbors and waterways. Their function is to lower a draghead to the bottom of the waterway, and to draw sediments and aquatic plants from areas that serve as vessel passageways. In the *Exxon Valdez* response, the dragheads were positioned at water surface level, alongside the vessel. Oil would then be brought to the draghead opening by containment booms, to be sucked into the vessel's large storage hoppers.

Dredges offered some advantages, one of which was that they had very large storage capacities. This permitted decanting, so that the mix of water with oil was not as great a problem as with other vessels. They could not, however, be used close to shore because of their deep draft. Also, because of the amount of internal mechanical equipment within the dredges, it was very difficult to clean the storage hoppers. Two Army Corps of Engineers (COE) dredges arrived on 18 and 21 April, respectively, and worked through most of May. Together the vessels collected 6,617 barrels of oil before being demobilized as floating oil operations neared an end.<sup>134</sup>

Not all floating oil could be skimmed. By late June, particularly in the Gulf of Alaska, what remained consisted of mousse patties and tarballs. Collection of these necessitated the organization of a new work force to carry out the task.

Tarball recovery teams usually consisted of a seiner that functioned as a "mother ship" for skiffs that collected the tarballs and mousse. Crews used dip nets to retrieve tarballs, many of which were entrained below the surface. Operations were staged out of Homer and (later) Kodiak. These efforts netted (literally) about sixty-five barrels of tarballs and other heavily emulsified and weathered oil.

#### THE SOVIET SKIMMER M/V VAYDA GHUBSKY

Early in April the Coast Guard and Exxon learned of an offer of assistance from the Soviet Union.<sup>135</sup> The Soviets could make available, they reported, an eight thousand cubic meter capacity oil-recovery vessel, the M/V *General Vayda Ghubsky*. The *Vayda*

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134. It is notable that most of the productivity of the COE dredges was recorded during the first few days (in April) that they were involved. The *Essayons*, for example, picked up 1,680 barrels of oil during its first four days on scene, and only 498 during the following three weeks. Also, what was being collected was laced with sand and gravel.

135. Commandant (G-CI), electronic mail communication to FOSC and ten others, 4 Apr. 1989, no. C2, FOSC Exxon Valdez Archive.



*Ghubsky* was one of the world's largest oil spill response vessels, and its massive oil gathering and storage capabilities made its use an intriguing possibility.<sup>136</sup> But bringing the vessel to the response proved to be a complex proposition. Extensive documentation requirements had to be faced, in such areas as safety of life at sea (SOLAS), Marine Pollution Prevention Convention (MARPOL), and U.S. Coast Guard marine inspection requirement. Because the vessel was considered a special interest vessel (Soviet bloc) it also had to meet U.S. Coast Guard standards.<sup>137</sup>

Exxon eventually entered into an agreement for the use of the vessel, and arrangements were made for it to depart for the Gulf of Alaska on Monday, 10 April. Transit to the spill area was projected to take about ten days, and plans were made for its use in western Alaska operations. The 425-foot vessel reported that it would need two tugs and 1,200 feet of sea curtain boom for its operations, and that it was capable of skimming a 360-foot swath. It was projected that Seward would serve as a staging area for the *Vayda Ghubsky's* operations.<sup>138</sup>

The *Vayda Ghubsky* arrived in Seward at noon on 19 April. A Coast Guard representative reported aboard, along with a VECO employee, a vessel pilot, and an interpreter.<sup>139</sup> U.S. Customs provided a Jones Act waiver of coastwise trading laws for a period of thirty days, thus permitting the vessel to commence operations. It was refueled at Seward, and readied for service near the entrance of Resurrection Bay. The vessel was maneuvered into position, and began initial "testing" at about 21 April. The 23 April reports were not encouraging. The vessel had collected only 12 barrels of oil, and had another 190 within its boom. It was reportedly making modifications.<sup>140</sup> Another two days were lost due to heavy weather, when the vessel was forced to seek a safe anchorage during a windy period on 24–25 April. On 27 April, it moved towards open water off the Kenai Peninsula to commence operations. It worked briefly in that area, albeit impaired by poor weather conditions, then diverted to Homer (due to a medical emergency), and on to Shelikof Strait.<sup>141</sup>

Exxon sent the *Vayda Ghubsky* as part of a detail to cope with a threat of floating oil impacting the Homer area. Though that threat abated when weather eliminated the problem, Exxon declared afterwards that, "We have been pleased to have had the opportunity to test this vessel, [but that] due to a number of factors, it is now unlikely that this unit will be of any further value." Exxon did not plan to extend the vessel's contract, according to its general manager.<sup>142</sup> In the meantime, the *Vayda Ghubsky* was

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136. The vessel is named after a General Vayda Ghubsky. One finds, however, that the vessel was referred to later in varied documents as the "Vaydagursky," the "Vaydagubsky," and the "Vaydaghubsky." There was, however, only one vessel, and the different names may be attributed to difficulty in spelling and interpreting the Soviet vessel's name.

137. Capt. D. Zawadzki, interview by Dr. T. Leschine (FOSC staff), A. van Emmerik (FOSC staff), and Lt. Comdr. R. Gaunt, Anchorage, 21 Feb. 1992, no. F214, tape; S. R. Martoche, (U.S. Dept. of the Treasury), letters to R. W. MacKechnie, Jr. (Donohue and Donohue, Counselors at Law), 3 May 1989, no. C38; 17 May 1989, no. C145; and 2 June 1989, no. C420, FOSC Exxon Valdez Archive.

138. USCG Pollution Report O 100821Z April 1989 (PWS Polrep 35), sec. (1)(O).

139. USCG Pollution Report O 200700Z April 1989 (PWS Polrep 51), sec. (1)(L).

140. USCG Pollution Report O 230628Z April 1989 (PWS Polrep 54), sec. (1)(L).

141. USCG Pollution Report O 300730Z April 1989 (PWS Polrep 61), sec. (1)(K).

142. O. Harrison (Exxon), letter to Vice Adm. C. Robbins, 30 Apr. 1989, no. C2168, FOSC Exxon Valdez Archive.

at work in Shelikof Strait recovering “good oil,” and collecting an estimated eighteen hundred barrels on 29–30 April.<sup>143</sup>

The Soviet vessel found scant patches of heavily weathered oil, but remained on station at Wide Bay. It was clear that any real hope of recovering significant amounts of floating oil was no longer a realistic possibility. The *Vayda Ghubsky* moved to Seward on 5 May for reprovisioning and removal of collected oily waste material.<sup>144</sup>

On 13 May the *Vayda Ghubsky* left Seward, and headed for Prince William Sound for operations with Alyeska. The vessel was reportedly no longer under contract to Exxon.<sup>145</sup> But there were new problems. VECO, Exxon’s lead cleanup agent, sought an extension of the coastwise waiver in order to employ the *Vayda Ghubsky* as a “standby” resource for future spills. U.S. Customs did not, however, view standing-by as critical to the cleanup, and thus questioned the need for a renewal of the emergency waiver.<sup>146</sup> The FOSC, concurring that there was no compelling reason to retain the *Vayda Ghubsky*, sent a letter of appreciation to the master of the Soviet vessel, thanking him for “the recovery of over 82,000 gallons of oil/mousse, [and for] hard work, ingenuity and perseverance” in the spill response.<sup>147</sup> The vessel departed soon afterwards.

Arriving nearly a month after the grounding of the *Exxon Valdez*, the *Vayda Ghubsky* encountered oil that was extremely weathered, and was proving exceedingly difficult for skimming operations of any kind to handle. As events had unfolded, the vessel had come a long way only to encounter conditions which made it impossible to perform to its full potential.

Help came from several other foreign nations, in addition to the Soviet Union. These included Denmark, England, Finland, Sweden, Norway, and Canada. Often the assets of these nations were made available by virtue of having been volunteered for the response. These resources required customs and Jones Act clearance, and special waivers had to be obtained. In some cases, mechanical systems brought from Europe were not rigged with hydraulic fittings compatible with those used in the United States, necessitating modifications.<sup>148</sup> The ramifications of the Jones Act are discussed in more detail in the chapters “Vessel Support” and “Federal Intergovernmental Relations” (chapters 16 and 19 respectively).

#### USE OF BOOMING

*Containment Boom.* Exxon purchased and brought to Alaska over half a million feet of containment boom, essentially floating mechanical barriers with several uses. Most of the boom used (73 percent) consisted of high buoyancy internal foam-flotation (or

143. Ibid., attachment.

144. USCG Pollution Report O 060601Z May 1989 (PWS Polrep 67), sec. (1)(L).

145. USCG Pollution Report O 150510Z May 1989 (PWS Polrep 76), sec. (1)(F). What happened to the Vietnam project, and why the vessel departed for Prince William Sound instead of Vietnam could not be determined.

146. S. R. Martoche (U.S. Dept. of the Treasury), letter to J. Kerrigan (VECO), 19 May 1989, no. C148, FOSC Exxon Valdez Archive.

147. Vice Adm. C. Robbins, letter to Capt. S. Rekin (master, M/V *Vayda Ghubsky*), 17 May 1989, no. C207, FOSC Exxon Valdez Archive. Exxon reported later that the vessel had recovered “2,002 barrels of oil.”

148. Exxon, “Valdez Oil Spill Technology 1989 Operations,” 17.

type "A") booms. Some thirty-two thousand feet of specialty booms were also employed, principally for trawling and semipermanent installations.<sup>149</sup>

Containment booms served several purposes. They were placed about the *Exxon Valdez* to control the spread of spilled oil, albeit unsuccessfully. They were also used to control the direction of current-borne oil, in "deflection" installations, and to protect such sensitive areas as hatcheries and anadromous streams. Containment boom was towed by vessels for the purpose of gathering and consolidating floating oil, and holding it for skimmers to recover. It was placed to trap oil found in sheltered coves until recovery teams could be detailed for skimming operations. Booms were also spread along shoreline cleanup work sites to control the release of sheens and outwash from shoreline cleaning operations.

Boom deployment presented several operational problems. Many workers had little or no previous experience in the handling of boom. Thus it was sometimes subject to improper handling, anchoring, towing, and/or lifting, despite the training provided. Some of the boom was storm damaged, and some sank or was otherwise lost. Exxon reported that 27 percent of its containment boom (about 140,000 feet) was no longer serviceable following the 1989 response.

*Sorbent Booms.* Another 345,000 feet of sorbent boom was used during the response. Sorbent booms are made of materials that resist water but adhere to oil. Some sorbent booms consisted of pads encased in a nylon netting (called "sausage" boom by workers), while others featured sorbent granules within a mesh netting ("popcorn" boom, in the colloquial). Another useful material was called "pom-pom" sorbent. Pom-poms were oleophilic fibers gathered together at one end, thereby resembling the pom-poms used by cheerleaders at athletic events. The many fibers provided substantial surface area, and thus had the capacity to entrap a great deal of oil. Snare boom was made up of lengths of pom-pom material strung together. It was particularly useful around shorelines, and in places where it could be placed near a containment boom. It was often used in a passive mode, staked out along a shoreline that was being treated and left to capture fugitive releases of oil that might occur after an initial washing.

*Other Defensive Booming Measures.* Exxon funded the construction, principally by local fishermen, of over fifty thousand feet of defensive boom consisting of two thousand logs, sheet plywood (to prevent overwashing), and a weighted geotextile undercurtain.<sup>150</sup> Homer, a community of about fifteen hundred located on the southwestern Kenai Peninsula, was particularly demanding of protection from advancing oil. When Homer area residents were engaged to construct log boom, a source of income and a sense of involvement in the response was provided.<sup>151</sup> Some floating oil did enter the lower Cook Inlet, and in some of the areas where log boom was stationed, oil did contact the locally fabricated devices (and contaminated the logs,

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149. Ibid., tables 2 and 26.

150. Ibid., 27.

151. Comdr. B. Morani, interview by Lt. Comdr. R. Gaunt and Dr. T. Leschine (FOSC staff), Anchorage, 16 July 1991, no. F171, notes, FOSC Exxon Valdez Archive.

necessitating that they eventually be burned).<sup>152</sup> Exxon noted, however, that the "effectiveness of this [log] boom was never really put to a test...because it was not exposed to very much oil."<sup>153</sup>

#### TRANSFER AND TEMPORARY STORAGE OF OIL

Exxon employed several types of pumps for the removal and transfer of recovered oil. The transfer pumps often had substantial difficulty with emulsified oil, and with oil that was laden with kelp or other oiled refuse. Of the thirty-four transfer systems that were used, most were vacuum pumps.

Storing recovered oil was an important component of the oil recovery operation. Oil recovery vessels with on-board storage, once full, necessitated shut down of skimming operations until they were offloaded. Storage barges, or on-board portable tanks, were utilized. Just two tank barges were available in the south-central Alaskan area at the time of the spill. Eventually others were brought in but the lack of off-loading capability initially imposed a substantial constraint on floating oil operations. Off-loading barges, like skimmers, also suffered problems caused by the weathered oil. One solution was the installation of heating coils in transfer barges to facilitate the pumping of the oil.

Securing adequate on-board storage capacity for recovered oil required innovative solutions. Cylindrical steel tanks saw heavy service, and "Fastanks," two thousand gallon frame and fabric devices, were often used. Among others put into service were small-capacity water separator tanks, aluminum fish boxes, and large-capacity (26,000 gallon) cylindrical rubber bladders that were towed behind skimming barges.

Most skimmer-recovered oil was shipped to lower 48 states locations for processing. Some went to a refinery at Baytown, Texas. Hopes that it could be refined into useful petroleum products were largely frustrated, particularly as oil became more weathered and contaminant laden. Much of the oil that was recovered was utilized as kiln fuel at various cement manufacturing plants in the Pacific northwest.

Recovering and handling oil presented increasing problems as time wore on. Very weathered and debris-laden oil would not flow freely through most vessels' pumping systems, thus slowing transfer operations. Hydrovac systems were the only ones that performed satisfactorily, imposing further restrictions on recovery operations.<sup>154</sup> Skimmer breakdowns, crew fatigue, unfavorable weather, pumping problems, and continuing difficulties with having storage vessels available on a timely basis combined to undermine the recovery effort. The commandant, during an on scene visit between 12–16 April 1989, expressed his dissatisfaction with the progress of floating oil recovery operations. He urged Exxon to increase its efforts, and to develop new strategies for floating oil pickup. One measure taken by Exxon in response, was to order skimmer

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152. R. MacCampbell (ADNR), interview by Lt. Comdr. R. Gaunt, Anchorage, 19 Nov. 1992, no. F708, tape, FOSC Exxon Valdez Archive.

153. Exxon, "Valdez Oil Spill Technology 1989 Operations," 33.

154. USCG Pollution Report O 160930 April 1989 (PWS Polrep 46), sec. (1)(A).

vessels that had previously been stationed where they could protect sensitive environmental areas to inlets and bays where it was felt that recoverable oil could be found.<sup>155</sup>

By late April, Exxon was experimenting with mud pumps to handle recovered oil. Oiled kelp contributed to equipment clogging. One novel, but time consuming approach that was tried involved heating the recovered material with steam boiler coils, thereby making it less viscous, and easier to handle. The system worked, but it took over two hours to prepare a relatively small load (thirty-two barrels) for handling.<sup>156</sup> Early in May, it was reported that in at least one instance most of the removal was being done through use of shovels, buckets, and manual labor.<sup>157</sup>

#### CLEANING AND MAINTENANCE OF BOOM AND VESSELS

*Boom and Vessel Cleaning.* Initially, boom was placed only in the most strategic places, as it was in short supply. When oil came into contact with deployed boom, it simply remained in place. Oiled boom was better than no boom at all, went the thinking. After the first few weeks, however, it was recognized that contaminated booming was itself a source of sheens. A system for cleaning "dirty" boom was needed. The first efforts were provided by teams of workers who manually lifted, applied cleansing agents, and brushed down contaminated boom. It took crews of six to twelve a "good day" to launder one thousand feet of boom. Later, wash barges were employed, enabling similar sized crews to cleanse one to two miles of boom per day.<sup>158</sup>

Maintaining the boom inventory required repair crews and a repair center. Damaged booms were replaced, brought to shore, and shipped to the repair center (in Anchorage). When it was judged that used booming was beyond repair, it was shipped to the Dayville Road waste management site in Valdez. As contaminated material, most of it was shipped (along with other oiled wastes) to the hazardous material disposal site in Oregon.

#### POST FREE-FLOATING OIL OPERATIONS ACTIVITIES

Although floating oil presence and operations diminished markedly during May of 1989, overflights continued throughout the summer months. Sheen sightings were a fairly common occurrence, though these generally did not involve concentrations of oil in recoverable amounts. Overflights were continued as part of winter operations. Exxon later reported that its winter overflights had involved over fifteen hundred missions, and that more than a half-million miles had been flown. Many of Exxon's flights included observers from ADEC and/or the Coast Guard.<sup>159</sup> The Alaska Department of Environmental Conservation conducted flights throughout most of the

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155. USCG Pollution Report O 170900Z April 1989 (PWS Polrep 48), sections (1)(A) and (1)(B).

156. USCG Pollution Report O 270810Z April 1989 (PWS Polrep 58), sec. (1)(B).

157. USCG Pollution Report O 020742Z May 1989 (PWS Polrep 63), sec. (1)(A).

158. Exxon established an extensive system of boat cleaning for much the same reasons.

159. Exxon, "1990 General Plan, March Planning Document," 15 Mar. 1990, appendix 2, no. W477, FOSC Exxon Valdez Archive, 7.

winter period, reporting flights on 77 percent of days during early- to mid-winter.<sup>160</sup> Coast Guard personnel took part in 175 overflights from mid-November through mid-February.<sup>161</sup>

This substantial flight activity revealed little other than sheens attributable to the effects of storms on still-impacted shorelines. No “new” emergency response-provoking patches of oil were discovered. These overflights were useful for monitoring the effects of wave cleansing on shorelines, as planning for the 1990 cleanup went forward.

Winter flight operations necessitated high levels of safety precautions. Winter survival training was required for all who took part, and special survival clothing was mandatory. Many additional operations requirements were instituted, including the use of spotter aircraft. Strict weather-conditioned flight restrictions were mandated.<sup>162</sup> Maintaining a winter overflight schedule in an area with extremely hazardous weather conditions proved to be difficult.

## SUMMARY

The storm that began on 26 March for all purposes closed the “window of opportunity” for an efficient and effective floating oil cleanup operation. The changes in characteristics of the oil after the storm were profound. What had been a somewhat cohesive slick of fresh oil became widely dispersed patches of mousse and sheen. Before the storm, testing of in situ burning and dispersants were showing encouraging results and hatcheries were not being directly threatened. After the storm both these technologies were no longer viable and the hatcheries were in harm’s way.

Skimming operations, which continued for some time after the storm, were also set back by it. The spread of the oil complicated the process of deploying the available skimmers. The altered characteristics of the oil reduced the efficiency of the skimmers and added to the problems of handling and disposing of the recovered oil. Skimming and mechanical recovery of the oil were the preferred options, and this preference might have acted to slow further what headway there was to be made with the other techniques.

The resolution of logistical and decision-making problems that hampered the use of dispersants, in situ burning, and skimming came too late. After the storm of 26 and 27 March oil was effectively on the shoreline, and it was a different oil spill needing different cleanup techniques. Despite the storm, hatchery protection proved successful and gave the response a visible victory at a time when little else was going well.

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160. USCG, “Operations Steering Committee” (summary of Operations Steering Committee meeting, 12 Dec. 1989), no. W412, FOSC Exxon Valdez Archive. When ADEC did not have an overflight, it was normally attributable to adverse flying conditions.

161. USCG, “Operations Steering Committee” (summary of Operations Steering Committee meeting, 20 Feb. 1990), no. W545, FOSC Exxon Valdez Archive.

162. Exxon, “Exxon Transportation Winter Operations Manual 1989-1990,” 27 Oct. 1989, sec. F, no. W490, FOSC Exxon Valdez Archive, 1 and 6.



## CHAPTER 4. EVOLUTION OF THE FOSC'S RESPONSE ORGANIZATION

### OVERVIEW

The response procedures in place on 24 March 1989 were simply overwhelmed by the magnitude of the spill and ensuing events. It was apparent from the first that this was no routine oil spill. It soon became apparent also that the normal organizational relationships that govern oil spill response were not going to work. Within the first month of the spill, three different organizational plans for the Federal On Scene Coordinator (FOSC) were implemented, and the roles and relationships laid out in the National Contingency Plan (NCP) for spill response experienced significant changes.<sup>1</sup> The *Exxon Valdez* oil spill was a watershed event that highlighted shortcomings in responding to what has since been defined as a spill of national significance.

The FOSC organization evolved as it did because the organizational structures and relationships defined by the NCP were quickly overwhelmed. The magnitude and extent of the spill necessitated a high degree of involvement by many organizations not normally concerned with oil spills. This meant that in the midst of the largest U.S. tanker oil spill, the Coast Guard and the rest of the response community were searching for a new set of rules and relationships while many newcomers to oil spill response were also providing guidance, direction, and "advice."

This chapter describes the changing organizational structures employed by the FOSCs. The issues that shaped the organization that each FOSC adopted are examined. In the first three weeks of the response, both the issues and the organization changed rapidly. The terms of Commander Steven McCall and Rear Admiral Edward Nelson, Jr. are treated together as the initial response phase and organization. Thereafter, the organizations established by Vice Admiral Clyde Robbins and Rear Admiral David Ciancaglini are addressed separately.

### THE NATIONAL CONTINGENCY PLAN

In the year before the *Exxon Valdez* grounding, the NCP was invoked more than 275 times. In most cases, the response system functioned in a reasonably predictable and well coordinated fashion. A predesignated Federal On Scene Coordinator would assume control, perhaps in partnership with a state counterpart. The FOSC would either directly manage a federal and/or state-run response effort or, more often, would work to monitor the containment and cleanup efforts of the responsible party.<sup>2</sup> Other federal, state, and local response or resource agencies would bring their interests into the response effort through the general umbrella of the NCP. The Regional Response

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1. USCG, "First Interim FOSC Report," 17 May 1991, no. F769, FOSC Exxon Valdez Archive, 10, 14, and 18.

2. National Response Team, "Report on the National Oil and Hazardous Substances Response System," 6 Mar. 1989, no. C1226, FOSC Exxon Valdez Archive, 7. The NRT reports that the NCP's Oil Pollution Fund was invoked to finance a federally managed cleanup in somewhat more than 50 of the 275 spills during fiscal year 1988.



Teams (RRTs) served as the principal forum in providing regional input and liaison with state governments.

The National Contingency Plan prescribes the basis for designating a Federal On Scene Coordinator. In appropriate marine jurisdiction, the Coast Guard's captain of the port (COTP) is usually the predesignated FOSC and assumes the principal leadership role for the duration of emergencies such as the *Exxon Valdez* spill.<sup>3</sup> Initially, Commander McCall, the commanding officer of Marine Safety Office (MSO) Valdez and COTP for Prince William Sound, assumed the FOSC role. When the floating oil moved into the Gulf of Alaska, a second MSO became involved. Captain Rene Roussel, commanding officer of MSO Anchorage and COTP for western Alaska, assumed the role of FOSC for western Alaska.<sup>4</sup> In the meantime, Commander McCall passed FOSC command to Rear Admiral Nelson on 7 April. Rear Admiral Nelson then yielded the FOSC leadership role to Vice Admiral Robbins on 15 April.

#### A BRIEF CHRONOLOGY OF THE RESPONSE LEADERSHIP

The NCP was implemented almost immediately when the *Exxon Valdez* spill occurred. Both the National and Regional Response Teams became involved for an extended period of time. Circumstances dictated several changes in the Federal On Scene Coordinator's position. Commander McCall served as the first FOSC, and later Rear Admiral Nelson, Vice Admiral Robbins, and finally Rear Admiral Ciancaglini each functioned in the position.<sup>5</sup> In addition, Coast Guard Commandant Paul Yost arrived on scene in mid-April to "provide personal oversight for this spill cleanup," and maintained an almost day-to-day contact with the spill leadership through most of the 1989 cleanup season. For this reason his participation is discussed along with that of the FOSCs.<sup>6</sup>

Commander McCall held the Prince William Sound FOSC designation for only two weeks, after which time Rear Admiral Nelson, commander of the 17th Coast Guard District, assumed the position.<sup>7</sup> Rear Admiral Nelson originally came to Valdez on 24 March to assist McCall, at the request of Vice Admiral Robbins, commander of the Coast Guard's Pacific Area.<sup>8</sup> The two-week period that preceded Nelson's assumption of the FOSC post was marked by intense efforts to secure and lighten the stricken vessel, and to deal with the massive volume of oil adrift in Prince William Sound.

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3. 33 CFR 153.105 (c).

4. USCG Pollution Report, 6 April 1989 (WAK Polrep 1). The NCP is somewhat ambiguous on how multiregional responses (40 CFR 300.35) should be handled. While subpart (a) states that "if a discharge...affects areas covered by two or more regional plans, the response mechanisms of both may be activated," subpart (b) states that "there shall be only one OSC/RPM at any time during the course of a response operation."

5. In addition, Rear Adm. J. W. Kime (14 June–15 July) and Rear Adm. D. E. Ciancaglini (7–28 August) served as FOSC, each on a short term relief basis. The purpose of the assignments was to provide a break for Vice Adm. Robbins, and to serve as a means of increasing exposure to spill operations for Coast Guard flag officers. A desire to orient a broad base of Coast Guard admiralty led to visits by other high ranking officers.

6. Adm. P. Yost, interview with K. Bohi (Alaska Public Television), broadcast on KAKM's "Oilwatch," 3 Apr. 1989, no. C840, FOSC Exxon Valdez Archive.

7. USCG Pollution Report O 071045Z April 1989 (PWS Polrep 29), sec. (1)(C).

8. Rear Adm. E. Nelson, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, Anchorage, 6 Aug. 1991, no. F110, tape, FOSC Exxon Valdez Archive.

Also, the worldwide news media had become focused on the spill in an unprecedented way. The basic story being reported in the press was that the spill was “out of control.” This required intensified efforts to deal with a skeptical and sometimes hostile public.<sup>9</sup> Nelson’s original purpose in coming on 24 March was to provide a more authoritative figure for dealing with the news media, Exxon, and the state of Alaska, thereby freeing up McCall to concentrate on operations. But continuing allegations that “no one was in charge” appear to have encouraged a formal change in spill response leadership.<sup>10</sup>

Early in April, President Bush, responding to concerns that the spill response was not progressing satisfactorily, intervened, personally mandating a new approach based upon placing oversight of the spill response into the hands of high level officials (including the commandant of the Coast Guard and the secretary of transportation). In addition, the president’s plan directed that the U.S. Department of Defense assume a supportive role in the cleanup.<sup>11</sup> The decision by the president to intervene thus introduced agencies new to spill response. It also introduced higher levels of participation than normal by the more familiar agencies (like EPA). Both necessitated new relationships among federal agencies, the state, and Exxon. The organization envisioned by the NCP was superseded at this point.

When Admiral Yost departed from Valdez, on 16 April 1989, he left behind Vice Admiral Robbins, commander of the Coast Guard Pacific Area, as FOSC. Thus, the third occupant of that post within the first month of the response had been installed. Robbins proved to be a forceful and direct leader, not only issuing a strong “I am in charge” statement, but also providing an organizational structure that endured, with minor modifications, for the duration of the first year of the response.<sup>12</sup>

The FOSC position changed hands for two short periods of time before the end operations, first to allow Vice Admiral Robbins some needed rest and later to allow him to return to his normal duty station. Rear Admiral William Kime became the acting FOSC from 15 June–2 July and Rear Admiral Ciancaglini from 10–28 August. At the close of summer operations, 30 September 1989, Vice Admiral Robbins turned over FOSC responsibilities permanently to Rear Admiral Ciancaglini, commander of the Coast Guard’s 17th District, based in Juneau. The post remained assigned to Rear Admiral Ciancaglini until his move, in June of 1992, to a new assignment at Coast Guard Headquarters. Commander Dennis Maguire who had originally been detailed to the response from MSO New Orleans in 1989, then assumed the FOSC designation for the balance of Coast Guard *Exxon Valdez* operations. Vice Admiral Robbins returned to resume his normal assignment, later assuming duties at the offices of the secretary of transportation.

On 12 April, Admiral Yost made his second visit to Alaska. He was directed by the president to assume personal oversight of the response, as the president’s on scene

9. Nelson, interview, 6 Aug. 1991; Comdr. G. A. Reiter, interview by Dr. T. Leschine (FOSC staff), 7 Aug. 1991, no. F737, notes, FOSC Exxon Valdez Archive; and USCG Pollution Report O 071045Z April 1989 (PWS Polrep 29), sec. (1)(C).

10. Nelson, interview, 6 Aug. 1991.

11. States News and Associated Press, “Bush Orders Military to Oil Cleanup,” *The Anchorage Times*, 7 Apr. 1989.

12. Vice Adm. C. E. Robbins, memorandum to distribution (details of the Robbins organizational structure, and a strongly worded statement about who was “in charge,” 20 Apr. 1989), no. C629, FOSC Exxon Valdez Archive.

representative.<sup>13</sup> His message was clear; he had come to "take charge," to remove obstacles to progress, and to help mobilize a more efficient response. During his week in the spill area, he directed Exxon to prepare a detailed response plan, and he installed Vice Admiral Robbins as FOSC.

Admiral Yost described the task as being "like a war," and he proclaimed a need to "wage war" on the spill. He also said he was not going to be "controlled by committees" (though he emphasized that he would listen to what they had to say).<sup>14</sup>

For those who had called for a strong leader, Admiral Yost's visit provided evidence that firm leadership had arrived. Admiral Yost, in the view of one observer, "came in and cut right through the crap. He got everyone to wear the same baseball caps." Jack Lamb, acting president of the Cordova District Fishermen's Union (and an early critic) noted that: "Admiral Yost said, 'I'm in charge here.' Nobody had the authority to say that before he arrived."<sup>15</sup> Though Lamb's observation was not technically valid (since an FOSC had been assigned since the response's beginnings), his remarks serve to illustrate the perceptions that existed. Yost also cautioned that there would be no miracles forthcoming, and that the job ahead would be long and hard.<sup>16</sup>

#### THE INITIAL RESPONSE (COMMANDER MCCALL AND REAR ADMIRAL NELSON [24 MARCH–15 APRIL 1989])

The first twenty-one days of the response were a period of great turmoil and stress. In part this reflected the great uncertainties and rapid change in the situation itself, requiring frequent adjustments. In the response's early days, the status of the grounded vessel and its remaining cargo, and the ability of the protective measures that could be mustered to protect fish hatcheries and other critical resource areas were constant concerns. Against this backdrop, the task of trying to contain and recover the mass of oil released into Prince William Sound itself quickly took on crisis proportions.

Commander McCall, who assumed the FOSC role within the first hours of the grounding of the vessel, immediately mobilized his staff to begin the response effort. Among his first actions was to dispatch his executive officer, Lieutenant Commander Tom Falkenstein, and Chief Warrant Officer Mark DeLozier, along with Alaska Department of Environmental Conservation (ADEC) representative Dan Lawn, to the stricken vessel, which lay some twenty-five miles out from the port. Falkenstein was to take command of efforts to stabilize and lighter the grounded vessel, while DeLozier was to begin the official investigation of the causes for the grounding.<sup>17</sup>

Among the tasks faced by McCall and his forty-three person staff was the need to notify others of the spill, to begin making an assessment of the seriousness of the situation,

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13. USCG Pollution Report O 140617Z April 1989 (PWS Polrep 43), sec. (1)(A); see also Yost, interview with Bohi on KAKM "Oilwatch."

14. Yost, interview with Bohi, KAKM "Oilwatch."

15. A. Davidson, *In the Wake of the Exxon Valdez: The Devastating Impact of the Alaska Oil Spill* (San Francisco: Sierra Club Books, 1990), 126.

16. USCG, notes on meeting with Commandant Yost, 12 Apr. 1989, no. C972, FOSC Exxon Valdez Archive.

17. CWO M. DeLozier, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, Valdez, 25 July 1991, no. F174, notes, FOSC Exxon Valdez Archive.

and to initiate a response. To McCall's representatives aboard the stricken vessel, immediate concerns included the need "to collect information which would help to mitigate the situation, to begin an investigation, to stabilize the [general] situation and assist in any way, to get the rest of the oil off the ship, to avoid the capsizing or breakup of the vessel, and to report the size or quantity of the oil slick."<sup>18</sup>

With Alyeska having taken initial responsibility for the response, the shoreside command quickly became enveloped in efforts to deploy available booms and skimmers to contain the slick and protect fish hatcheries and other critical resources, to dispatch pumps and secure a vessel to facilitate off-loading of the remaining oil, to secure the port and traffic lanes against vessel traffic that might interfere with operations, to secure additional equipment and personnel, and to deal with what proved to be thorny questions of whether dispersants or in situ burning should be used to combat the spread of spilled crude oil.<sup>19</sup> In addition, telephone inquiries and agency, industry, and news media representatives began to flood the Valdez command post. It soon became evident to the MSO staff that the assistance of many more people would be needed during the days and weeks to follow.<sup>20</sup>

It was on the second day (25 March) that the first organizational chart for dealing with the spill and its aftermath was published (figure 4.1). The structure outlined in this chart is typical of the kind of spill response organization envisioned in the NCP. Commander McCall, in setting up the organizational framework, included the Seventeenth Coast Guard District (CGD 17) and the Pacific Strike Team (PSF in the chart), an action which took the response to the highest level normally envisioned in the NCP. The organization would continue to undergo modification, however, as the scope and complexity of the cleanup continued to grow.

On the second day following the spill, Rear Admiral Edward Nelson, Jr., commander of the CGD 17 in Juneau, arrived in Valdez along with Captain Glenn Haines, the 17th District chief of the Marine Safety Division, and Commander Dennis D. Rome, the 17th District Marine Environmental Protection Branch chief. Rear Admiral Nelson went to Valdez following discussions between Nelson and Vice Admiral Robbins, commander of the Coast Guard Pacific Area and Rear Admiral Nelson's immediate superior in the chain of command.<sup>21</sup> Rear Admiral Nelson's objective was to "provide senior level support" for Commander McCall, and to furnish personal and key staff assistance in activating the response.<sup>22</sup> Although Nelson lacked extensive oil spill experience, he was welcomed by Commander McCall as an important asset. Rear Admiral Nelson assumed a high-profile role in dealings with Exxon, ADEC, and the media (a role in which he was supported behind-the-scenes by Captain Haines), thus permitting

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18. Ibid.

19. See appendix A "Chronology," in volume II of this report for dates 24 Mar.–Apr. 1989.

20. DeLozier, interview, 25 July 1991; Comdr. S. McCall, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, Lt. T. Staats, and Lt. Comdr. H. Young, Anchorage, 29 July 1991, no. F111, tape; and Lt. E. Wieliczkievicz, interview Dr. T. Leschine, Lt. Comdr. R. Gaunt, and Lt. T. Staats, Valdez, 19 July 1991, no. F163, notes, FOSC Exxon Valdez Archive. Recognition that the MSO had a major disaster on its hands, and that the small staff in Valdez was quickly overwhelmed, was a common theme in the interviews conducted with the three members of the 1989 MSO staff.

21. Nelson, interview, 6 Aug. 1991; Vice Adm. C. Robbins, interview by Lt. Comdr. R. Gaunt, Washington, D.C., 29 Aug. 1991, no. F107, tape, FOSC Exxon Valdez Archive.

22. RRT17, Incident 34, report 5 (report from electronic emergency response network maintained by NOAA, 25 Mar. 1989).

Commander McCall to focus on the important work of salvage and response. Commander Rome, with extensive marine safety experience (including earlier service as commanding officer of the Pacific Strike Team), brought additional technical expertise during a critical time in the response.<sup>23</sup>

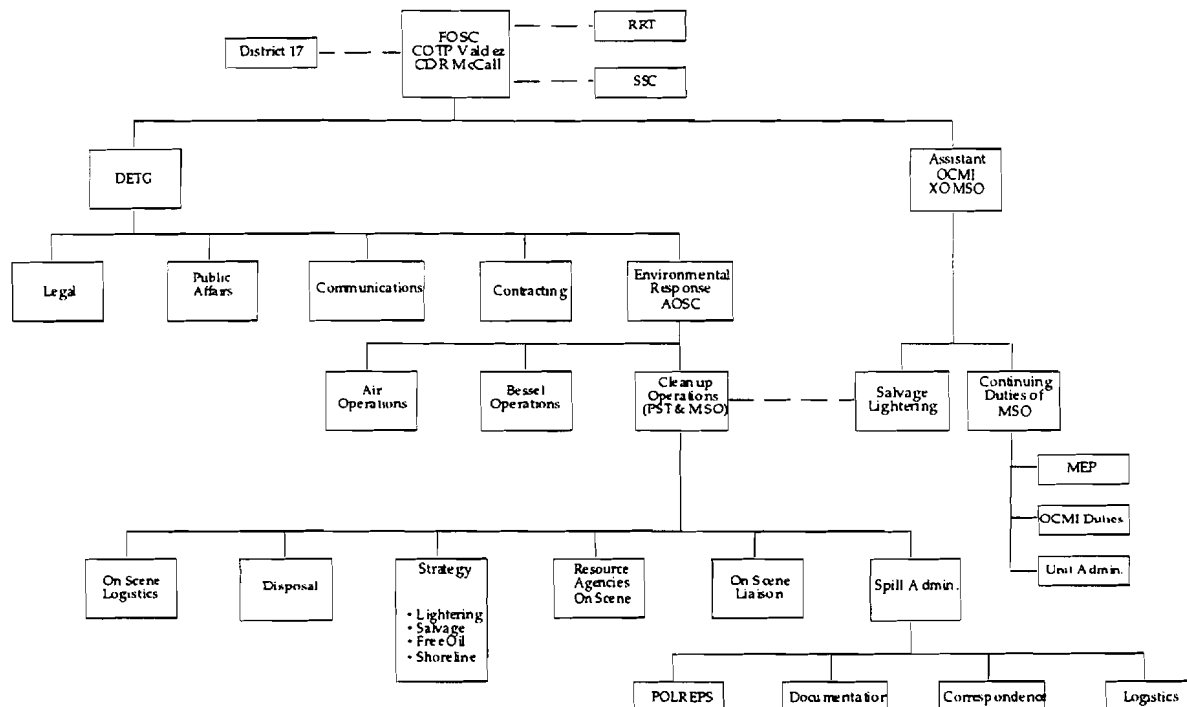


Figure 4.1. FOSC Organizational Chart (25 March 1989).

Source: USCG, "First Interim FOSC Report," 17 May 1991, no. F769, FOSC Exxon Valdez Archive.

Rear Admiral Nelson, on 6 April, assumed the FOSC leadership role.<sup>24</sup> Although his tenure in the position proved to be a short one, he also introduced a new organizational structure (figure 4.2). There was provision for DOD involvement in this plan. He had not come to the spill area with the intent of displacing McCall as FOSC. But as a result of his daily high-profile dealings with Exxon's Frank Iarossi and ADEC's Dennis Kelso, he was increasingly looked to by others as the key Coast Guard spokesperson. Rear Admiral Nelson also had a previously established, and cordial, relationship with Steve Cowper, governor of the state of Alaska.

Rear Admiral Nelson's term as FOSC would be very brief. The next day in Washington, President Bush announced that he was directing that "increased military involvement" (under the Joint Task Force) begin, that Secretary of Transportation Skinner "take charge of the spill," and that Admiral Paul Yost go to Valdez.<sup>25</sup> Vice Admiral Robbins was installed as FOSC on 15 April, and Rear Admiral Nelson returned to Juneau to resume his CGD 17 command responsibilities on the same date.<sup>26</sup>

23. McCall, interview, 29 July 1991.

24. USCG Pollution Report O 071045Z April 1989 (PWS Polrep 29), sec. (1)(C).

25. G. Boyd, "Bush Sends Team to Assess Cleanup," *The New York Times*, 29 Mar. 1989.

26. S. Skinner (DOT) and W. K. Reilly (EPA), "The Exxon Valdez Oil Spill: A Report to the President" (prepared by The National Response Team, May 1989), no. C1388, FOSC Exxon Valdez Archive.

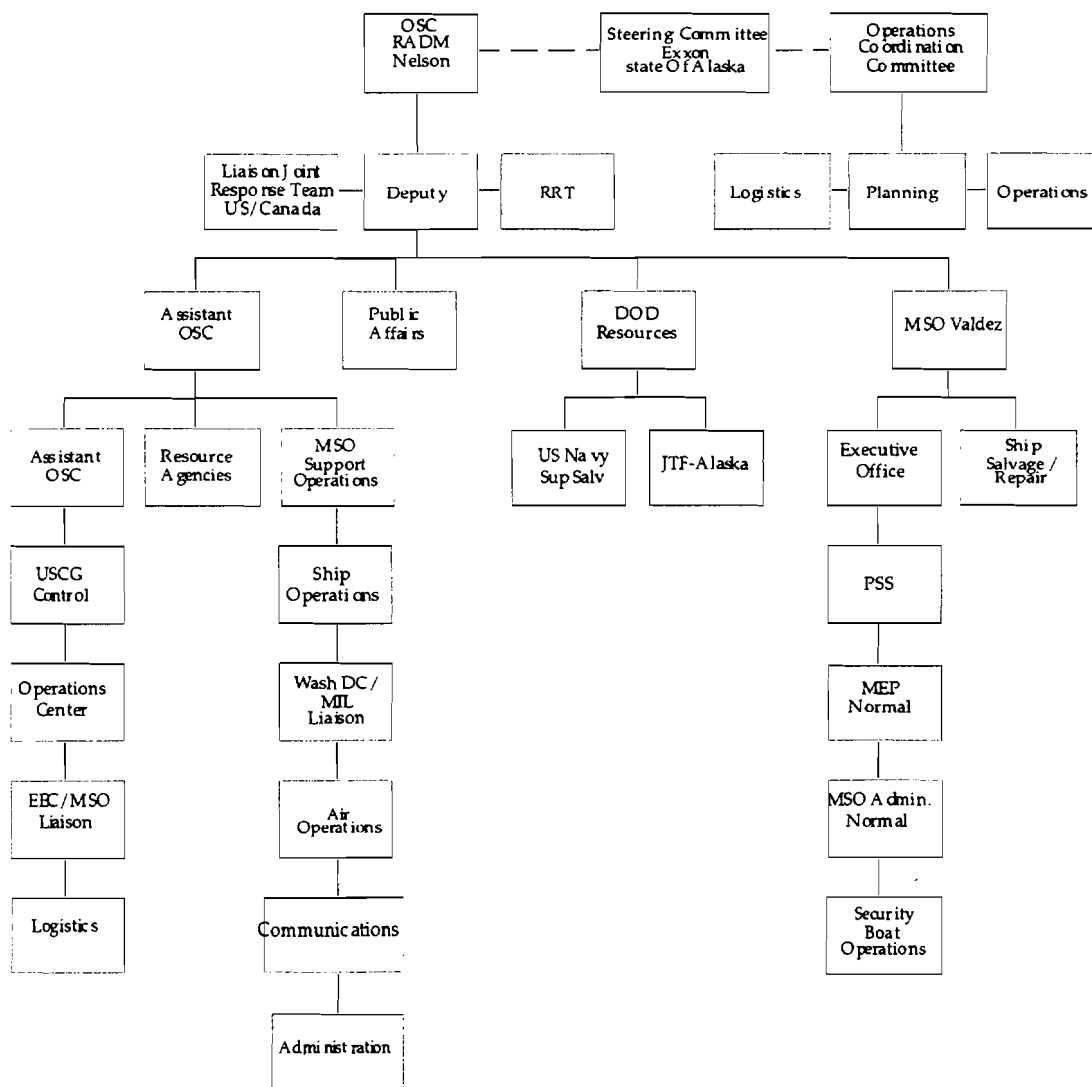


Figure 4.2. FOSC Organizational Chart (06 April 1989).

Source: USCG, "First Interim FOSC Report," 17 May 1991, no. F769, FOSC Exxon Valdez Archive.

### ISSUES THAT INFLUENCED SUBSEQUENT EVOLUTION OF THE RESPONSE ORGANIZATION

An examination of several issues reveals underlying influences on the continuing evolution of the response organization. The issues of dispersant use, in situ burning, the "Troika," federalization, and the "who's in charge" question, are particularly important. Both dispersant use and in situ burning became major issues within the first three days. The "Troika," a temporary ad hoc high-level decision-making arrangement, came into prominence on 26 March. The federalization and "who's in charge" issues became prominent after the major storm of 27–28 March. These issues highlight the limitations on the NCP structure in a spill of national significance, the difficulty of providing environmental "due process" in the midst of a major response, and the difficulty of meeting the differing (and at times conflicting) needs and demands of various agencies and non-governmental organizations.

## DISPERSANTS

Approval for the use of dispersants on the spill became a key issue for the Alaska Regional Response Team's (RRT) consideration. Exxon requested permission from the FOSC to apply dispersants on the leading edge of the slick at approximately 1000 local time on 24 March.<sup>27</sup> The FOSC had preapproval to use dispersants in this area, known as zone 1, but consulted with the RRT to ensure that no seasonal precautions were necessary.<sup>28</sup> At 1510 the FOSC gave his approval to Exxon for a test, and dispersants were applied at 1800.<sup>29</sup> The dispersant application, which involved the use of a helicopter equipped with a three hundred gallon spray bucket (the only dispersant application equipment available at the time) was judged ineffective, thereby laying the seeds for considerable debate over whether dispersants should continue to be used.<sup>30</sup> Neither the RRT nor the FOSC was able to secure the consent of ADEC during the critical period in the spill's first few days in which dispersants might have been effectively used.<sup>31</sup>

## IN SITU BURNING

The situation with in situ burning was very similar to that with dispersants. Approval for its use required the FOSC to seek concurrence of the EPA member to the RRT and the state of Alaska. Additionally, the ADEC air quality office had to issue a permit.<sup>32</sup> Just as in the case of dispersants, the state had several avenues available to control the eventual use or non-use of this technology. The state could act either under the NCP (40 CFR 300.84 [b]) or under its permitting authority. This duality of roles, exercised not only by the state but also by federal agencies, tended to de-emphasize the role of the RRT and to create incentives for direct FOSC involvement with high-level state representatives.

## "THE TROIKA"

By Sunday (26 March), Rear Admiral Nelson, and Exxon's Frank Iarossi, with whom Nelson was by then in frequent contact, had come to believe that there was a need to formalize a decision-making role for the higher level officials from Exxon, ADEC, and the Coast Guard. Rear Admiral Nelson initiated informal discussions with Iarossi and state officials leading to the establishment of the Operations Steering Committee, a three-component organization consisting of decision makers from each of the three entities (subsequently dubbed "the Troika" by some unknown party). Iarossi not only encouraged the idea (which appears to have originated with Nelson), but also encouraged Nelson to take the leadership role. ADEC Commissioner Dennis Kelso,

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27. RRT17 Incident 35, report 3.

28. Comdr. S. A. McCall, "Oil Spill Dispersant Application," 20 Apr. 1989, no. C952, FOSC Exxon Valdez Archive. The Exxon Valdez was aground in an area which between 1 March and 15 October changes from zone 1 (OSC discretionary) to zone 2 (EPA/ADEC concurrence required). The slick was moving toward a zone 1 area, however.

29. USCG Pollution Report P 251009Z March 1989 (PWS Polrep 3), sections (2)(A) and (2)(E).

30. Comdr. S. McCall, "Exxon Valdez Oil Spill—24 March, 1989 Oil Spill Dispersant Application," 20 Apr. 1989, no. C952, FOSC Exxon Valdez Archive.

31. This issue and in situ burning, which follows, are discussed more extensively in chapter 3, "Floating Oil Operations."

32. National Transportation Safety Board (NTSB), "Marine Accident Report: Grounding of the U.S. Tankship Exxon Valdez on Bligh Reef, Prince William Sound near Valdez, Alaska, March 24, 1989" (report no. NTSB/Mar-90/04, 31 July 1990), no. W1962, FOSC Exxon Valdez Archive, 148–149.

who was eager to participate at the highest levels of decision making, gave his tentative approval to Nelson's idea as well.<sup>33</sup>

The Troika was intended to resolve conflict, to facilitate decision making, and to assure clear lines of communication among the spill's principal players. Nelson felt that the arrangement would not compromise FOSC prerogatives, especially since he would assume the lead role in the group (although he also saw that such an organization did not clearly map into the command structure envisioned in the NCP).<sup>34</sup> This was the first major departure from the NCP-inspired response organization.

The Troika never achieved its promise. The intention was that the organization would be formally chartered through a memorandum of agreement among its principals. The agreement drawn up by Nelson and Iarossi apparently did not meet the approval of other officials within Exxon, however. Additionally, Commissioner Kelso sent a representative without decision-making authority to many of the informal meetings that were held. The result was a situation in which, in the view of the Coast Guard and Exxon, the ADEC commissioner was making statements publicly which were at variance with what his aide had agreed to in private. While the formal agreement was still being perused at Exxon headquarters, the decision, in Washington, to centralize decision making permitted the idea of (and perhaps need for) the formalized Troika concept to fade from prominence. While the three parties continued to have regular contact with one another, it appears that the idea of a formal Operations Steering Committee was quietly forgotten.<sup>35</sup>

#### FEDERALIZATION OF THE RESPONSE

On 26 March, Governor Steve Cowper announced that he had declared the incident to be a state emergency, and soon followed with a call for the federal government to take direct charge of the spill cleanup.<sup>36</sup> Cowper's wishes, however, were not granted, as federal authorities elected to encourage Exxon's continued lead role in the cleanup. The Alaska Oil Spill Commission, in its later evaluation, concluded that Exxon had the financial wherewithal to pay cleanup costs, while the Coast Guard (which would have had to draw on an Oil Pollution Fund containing only \$6.7 million at the time) would need special funding arrangements, should it assume the lead financial role. In addition, Exxon had the advantage of being able to commit large sums of money without having to deal with the slow and cumbersome requisition and procurement procedures of the federal government.<sup>37</sup>

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33. Nelson, interview, 6 Aug. 1991.

34. Ibid.

35. Ibid.

36. Governor S. Cowper (state of Alaska), letter to Rear Adm. E. Nelson, 5 Apr. 1989, no. F430, FOSC Exxon Valdez Archive. D. Kelso (ADEC), during a 5 Nov. 1992 discussion with Dr. T. Leschine, suggested that the governor's letter did not intend to effect full federalization. Instead, the state's objective was to strengthen the Coast Guard's "directing" authority (D. Kelso, interview by Dr. T. Leschine [FOSC staff], Seattle, 5 Nov. 1992, no. F742, FOSC Exxon Valdez Archive).

37. Alaska State Oil Spill Commission, Executive Summary, in "Spill: The Wreck of the Exxon Valdez," Feb. 1990, no. W1593, FOSC Exxon Valdez Archive. See recommendations 39 and 52.



The governor was motivated to call for federalization of the response by perceptions that Exxon was not being sufficiently responsive.<sup>38</sup> While Rear Admiral Nelson, who at that time was still acting behind the scenes in support of Commander McCall, felt that Exxon had been "a responsive spiller" he agreed that Exxon's organization lacked "clear evidence of a coherent, focused plan, an accounting of the deployed resources and those requested, good communications between cleanup crews and control authorities—a sense of direction that enables all parties to identify their roles and measure progress." Rear Admiral Nelson believed, however, that on balance federalization would put the Coast Guard: "Behind the eight ball, trying to establish contracts, some which might have to be bid. We'd lose time in the cleanup and generally be in a poorer position, subject to being blamed for...what would be perceived as an inadequate, tardy response after we assumed control." While Rear Admiral Nelson also saw that federalization would have the advantage of leading to more cleanly defined lines of authority and responsibility, he opted for a middle course, proposing to Frank Iarossi "an organizational change to give me operational management of the resources Exxon has contracted for, in addition to Coast Guard forces."<sup>39</sup>

Thus a principal motivation behind formation of the Coast Guard-Exxon-ADEC Operations Steering Committee, or "Troika," in the form proposed by Nelson, appears to have been the need to strike a middle ground between the two extremes of federalization on the one hand and a situation where Exxon had too free a hand in deciding how to organize its own resources to attack the cleanup on the other. Although the Troika never became formalized, forcing Exxon to present in detail its plans for shoreline cleanup became a primary focus of Nelson's brief command as FOSC.

At a 12 April meeting with Exxon's Otto Harrison (who had replaced Frank Iarossi as Exxon's operations manager), Nelson laid out what he felt were the minimum requirements for a shoreline cleanup work plan. Admiral Yost reaffirmed those requirements in a meeting with Harrison the next day, insisting further that the assumptions behind the detailed written plan Exxon was preparing be presented to him and Nelson orally within twenty-four hours (and that the written plan be delivered by 15 April). A 14 April letter to Otto Harrison from Rear Admiral Nelson reinforced these expectations.<sup>40</sup> Rear Admiral Nelson reported that Admiral Yost was "reasonably satisfied" with the plan Exxon delivered, though it passed through several more revisions in the coming months.

Exxon announced its intention to pay costs associated with the spill response during the earliest hours of the spill.<sup>41</sup> However, the time that was spent in planning and organizing, and in mobilizing resources for the large-scale operation that was to follow, was interpreted by some as time that was being wasted, a theme that received some

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38. 40 CFR 300.52 (c). The process of federalization of a spill is described in the NCP.

39. Rear Adm. E. Nelson, personal notes to the office of Senator T. Stevens, no. C567, FOSC Exxon Valdez Archive.

40. Rear Adm. E. Nelson, letter to O. Harrison (Exxon), 14 Apr. 1989, no. C6, FOSC Exxon Valdez Archive.

41. B. Dietrich, "Anger, Frustration in Valdez," *The Seattle Times/Post Intelligencer*, 26 Mar. 1989, sec. A.

prominence in the popular press.<sup>42</sup> Exxon's posture, however, was that "government indecision" had been responsible for the delay in getting the response into full-fledged motion. "The company had been unable to begin cleanup efforts," complained Chairman Rawl, "until the plan had been approved by 14 or 15 different agencies."<sup>43</sup> Rear Admiral Nelson was particularly incensed by statements made by Rawl at an 18 April news conference, that the cleanup was delayed by the slowness of federal and state agencies to approve Exxon's 15 April plan once it was submitted to them, and by later claims that the same government indecision had permitted the slick to "spread out of control" by denying Exxon the opportunity to apply dispersants in a timely fashion.<sup>44</sup>

#### THE "WHO'S IN CHARGE" QUESTION

The atmosphere of stress, disorder, and occasional acrimony evident in the response's early days was reflected and amplified by the news media.<sup>45</sup> Media observers interpreted the perceived lack of action and progress as likely indications that "nobody was in charge" of the spill cleanup.<sup>46</sup> Whether or not more could have been accomplished during the early period through improved organization or a higher degree of consensus among the principal agencies and the responsible party, remains an issue of considerable debate. Lack of organization and decision-making capabilities, according to Commander McCall, were not the most significant problem. McCall felt instead that "we were playing all the cards that we had." The few resources that were available were being employed in the most effective manner that circumstances would permit. This point was echoed by others who followed or joined McCall in the spill response effort.<sup>47</sup> The limitations imposed by the lack of equipment (including the availability of dispersants and aircraft suitable for their application) appear to be among the most significant of the many difficulties that plagued early efforts to deal with the spill.<sup>48</sup>

The earliest weeks of the response found organizations unfamiliar with one another and with quite different missions and modes of operation (problems sometimes compounded by overlapping jurisdictions or conflicting authority) being forced to work together in a highly politicized and chaotic atmosphere. In reflecting upon the events

42. R. Suro, "Oil Cleanup Bogs Down in Confusion," *The New York Times*, 14 Apr. 1989.

43. C. Wohlforth, "New Admiral Takes A Turn at Oil Spill Duty," *Anchorage Daily News*, 19 Apr. 1989, sec. A.

44. J. Holusha, "Exxon: Government Indecision Biggest Factor in Spread of Spill," *The New York Times*, reprinted in the *Juneau Empire*, 19 Apr. 1989; and Rear Adm. E. Nelson, facsimile to Vice Adm. C. Robbins, 20 Apr. 1989, no. C955, FOSC Exxon Valdez Archive.

45. USCG Pollution Report O 140617Z April 1989 (PWS Polrep 43), sec. (1)(A); and Yost, interview by Bohi, KAKM "Oilwatch."

46. In a later study of media coverage of the *Exxon Valdez* incident done at the Ohio State University School of Journalism, it was indicated that many newsmen who arrived on scene during the initial few days of the response were general reporters who were unfamiliar with Alaska, the oil industry, and the dynamics of a major oil spill. Two tendencies emerged, according to the study: (1) Reporters gained much of their source material from those who were most accessible. Often such persons were angry fishermen or environmentalists who were impatient and generally upset with the situation; and (2) A pattern emerged where the incident was portrayed as a "good versus evil" confrontation. "Good" forces desired and urged prompt action, while "evil" forces were perhaps seen as being procrastinative in getting on with the task of cleanup (Ohio State University School of Journalism, "News Coverage of the Exxon Valdez Oil Spill: Summary of Information from Surveys of Reporters and Sources," 17 Apr. 1992, no. F299, FOSC Exxon Valdez Archive).

47. Comdr. E. Thompson, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, Valdez, 19 July 1991, no. F165, notes, FOSC Exxon Valdez Archive; and Reiter, interview, 7 Aug. 1991.

48. Holusha, 19 Apr. 1989; Rear Adm. E. Nelson, facsimile to Vice Adm. C. Robbins, 20 Apr. 1989, no. C955; and USCG, "G-MER Conference Report" (summary of conference held in Alexandria, Virginia, 4-6 Dec. 1989), no. W292, FOSC Exxon Valdez Archive. Conversation between Vice Adm. Robbins and Comdr. Reiter.

of the early days, Rear Admiral Nelson recalled that the Coast Guard had attempted to be a stabilizing element in a very unstable situation.<sup>49</sup> Rear Admiral Nelson reported that upon his arrival in Valdez there was a great deal of chaos. Exxon had set up a control center away from Coast Guard contact; in order to maintain effective liaison, Rear Admiral Nelson established a Coast Guard representative at Exxon's "boiler room."

Vice Admiral Robbins, at the USCG Headquarters Marine Environmental Response Division (G-MER) Conference in December 1989, discussed the NCP's wording on authority. He felt that one "can't figure out the responsibilities." The NCP's ambiguity was a key reason questions emerged about who had what authority. He further observed that "a benevolent dictator" would have been a better option than the Troika arrangement that briefly emerged.<sup>50</sup>

The spill attracted not only the official attention of high-level Coast Guard leaders, but also the involvement of a three-star U.S. Air Force general, the secretary of transportation (who also visited Valdez), and the president of the United States, who directed Admiral Yost to go to Valdez and who later dispatched Vice President Dan Quayle to the scene.<sup>51</sup> The level of attention accorded to how the spill response was being managed at the top was unprecedented, leading some observers to wonder whether the NCP hadn't become "lost in the process."<sup>52</sup> The *Exxon Valdez* spill produced the concept of a "spill of national significance," a crisis whose environmental, social, political, and economic impacts were of such magnitude that the normal, regionally focused modes of response could not provide the necessary levels of control.<sup>53</sup>

The "who's in charge" question that was continually raised in the earliest weeks of the response also calls attention to the inability of the preexisting organizational structure to deal with a spill of this magnitude. While it should have been clear from the pronouncements of the president, the commandant, and Vice Admiral Robbins that the FOSC was in fact "in charge," and that organizational relationships consistent with this would evolve, the chorus of official voices speaking at all levels of authority at the time created the impression in many that authority and direction, and not the lack of capability, was the primary problem.<sup>54</sup>

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49. Nelson, interview, 6 Aug. 1991.

50. USCG, "G-MER Conference Report," comments by Vice Adm. Robbins on day two of the conference.

51. USCG Pollution Report O 071045Z April 1989 (PWS Polrep 29), sec. (1)(C); USCG Pollution Report O 160930Z April 1989 (PWS Polrep 46), sec. (2)(I); USCG Pollution Report O 150415Z June 1989 (PWS Polrep 107), sec. (2)(B); USCG Polrep R 020615Z July 1989 (PWS Polrep 124), sec. (3)(C); USCG Pollution Report R 280345Z August 1989 (PWS Polrep 181), sec. (3)(A); and USCG Pollution Report R 290302Z September 1989 (PWS Polrep 206), sec. (3)(D). Pollution reports, issued at the FOSC, record specific dates of leadership changes. For background in President Bush's actions, see also States News and Associated Press, "Bush Orders U.S. Military To Oil Cleanup."

52. Thompson, interview notes, 19 July 1991.

53. The term "spill of national significance" (SONS) was in widespread use at the time of the writing of this report, but staff efforts failed to determine its origins.

54. Capt. M. Dorsey, memorandum to Rear Adm. D. Ciancaglini, 21 May 1990, no. W1162; Rear Adm. D. Ciancaglini letter to Commissioner D. Kelso (ADEC), 18 July 1990, no. W1312; Comdr. R. Nelson, memorandum to Capt. G. Haines, 22 Apr. 1989, no. C642; and Rear Adm. J. Sipes, memorandum to Rear Adm. D. Ciancaglini, 23 July 1990, no. W1318, FOSC Exxon Valdez Archive.

## THE RESPONSE UNDER VICE ADMIRAL ROBBINS (15 APRIL–30 SEPTEMBER 1989)

The appointment of Vice Admiral Robbins as FOSC on 15 April represented a significant change for the Coast Guard and the rest of the “traditional” spill response community. With Robbins came a new organizational structure and set of relationships that were not constrained by the past. If it didn’t work quick enough or well enough, Robbins changed it, worked through it, or around it, as necessary. The result was that those existing arrangements and ad hoc committees and relationships that got the job done were kept, and those that didn’t were little used or dropped.<sup>55</sup>

### THE REVISED ORGANIZATIONAL STRUCTURE

The new organizational plan implemented by Vice Admiral Robbins specified that there would be an assistant on scene coordinator (AOSC) in each of the contiguous areas, western Alaska and Prince William Sound (figure 4.3). Captain Roussel became the AOSC for western Alaska, relinquishing the parallel FOSC authority he had assumed. After Captain Roussel departed western Alaska on 4 June, leadership for the area was further consolidated under the FOSC in Valdez. The AOSC western Alaska position was shared, for most of the remainder of the summer operations period, by Commander Tim Balunis and Commander John Hersh, both of whom were borrowed from U.S. Coast Guard Headquarters in Washington.<sup>56</sup> The AOSCs for Prince William Sound during 1989 included Commander L. A. Doyle, Commander W. H. Fels, Commander R. K. Softye, and Commander J. P. Wysocki.

The Robbins organization established clear lines of authority for the remaining summer operations, which were soon focused very heavily on shoreline cleanup. Although it would not be accurate to state that the period was then free from issues and contention, the important parties appeared to adopt a “get down to business” posture at this point. The Robbins organization provided a framework that proved able to accommodate the needs of the 1989 cleanup. The Robbins organization also provided a formalized focus on areas outside Prince William Sound (through the incident command posts he established in Seward, Homer, and Kodiak) at a time when the FOSC was pushing Exxon to address in its planning documents the shoreline cleanup problems in western Alaska along with those in Prince William Sound. Moreover, he provided a formal entry point for inputs from both governmental and non-governmental outside interests to the decisions he would be making as FOSC, through creation of the interagency shoreline cleanup committees (ISCCs).

### IMPLICATIONS OF THE OIL’S SPREAD INTO WESTERN ALASKA

The movement of the oil from Prince William Sound into the Gulf of Alaska introduced a new set of variables. The NCP addresses multiregional responses (40 CFR 300.35): “If a discharge or a release moves from one area...to another area, the authority

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55. For the first time, with Vice Adm. Robbins, the Coast Guard had a free standing FOSC who was not associated with any Coast Guard unit or district. He was the first FOSC who answered directly to the commandant, with no intermediaries.

56. USCG, “FOSC Exxon Valdez Personnel Report,” 12 June 1991, no. F683, FOSC Exxon Valdez Archive.

should likewise shift.” In the case of the *Exxon Valdez* oil spill, a second FOSC for the western Alaska area became established, independently, by Captain Roussel who was COTP for western Alaska.<sup>57</sup> His authority was subsumed under that of Vice Admiral Robbins once Admiral Robbins assumed the FOSC position.

*Operations in Western Alaska.* By the end of March, spreading oil had moved from Prince William Sound into the Gulf of Alaska, heading generally towards the Kenai Peninsula, threatening the Kenai Fjords National Park, and a series of Gulf of Alaska islands that included Kodiak island. Captain Roussel, commanding officer at MSO Anchorage, assumed the FOSC role for this area (which was within his captain of the port jurisdiction) on 3 April.<sup>58</sup> Roussel was well aware of the substantial concern over the approach of the slick that existed throughout the communities of the region. Fishermen and public land managers, including representatives of the U.S. National Park Service (NPS) and U.S. Forest Service (FS), were particularly vociferous in demanding that major protective actions be undertaken immediately.

Captain Roussel moved aggressively to mobilize MSO Anchorage to deal with the spill in western Alaska. He undertook a “select and direct” strategy to bring back to MSO Anchorage several individuals formerly in his employ but since reassigned to other posts. His purpose was to fill key posts that would keep the MSO’s normal functions going while he concentrated on the spill.<sup>59</sup> He supported the establishment of the incident command posts (ICPs) in Kodiak, Homer, and Seward by local authorities that were later assimilated into the FOSC organization by Vice Admiral Robbins.

The existing local organization, and hence the organization that was to emerge in support of the ICPs established by Vice Admiral Robbins, varied from place to place. In the view of Commander Bill Morani, Captain Roussel’s assistant FOSC in the western Alaska area, Kodiak had the best organized local response operation in the region, probably because of the prior existence of the Kodiak Emergency Services Council. In Seward and Homer, the Coast Guard had greater problems meshing with the local organizations.<sup>60</sup>

In late April, Vice Admiral Robbins adopted a decentralized organizational arrangement for western Alaska. This was done by deliberate design; as Robbins pointed out in his letter of 20 April, outlining his intention to restructure the spill response organization:

Another justification for dividing the areas in this manner is to insure local concerns in the cleanup are addressed and that cleanup in each area goes as quickly as humanly possible....I want to insure that all parties with a significant interest are represented.

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57. USCG pollution report, 6 April 1989 (WAK Polrep 1).

58. Ibid.

59. Capt. R. Roussel, interview by Dr. T. Leschine (FOSC staff), Seattle, 26 June 1991, no. F158, notes, FOSC Exxon Valdez Archive. These included Comdr. E. Thompson who took over OCMI at MSO Anchorage, and Comdr. T. Rice who became XO.

60. Comdr. B. Morani, interview notes by Dr. T. Leschine (FOSC staff) and Lt. Comdr. R. Gaunt, Anchorage, 16 July 1991, no. F171, FOSC Exxon Valdez Archive.

I particularly want to hear the voices of the Native Alaskans in those sectors where they have an interest.<sup>61</sup>

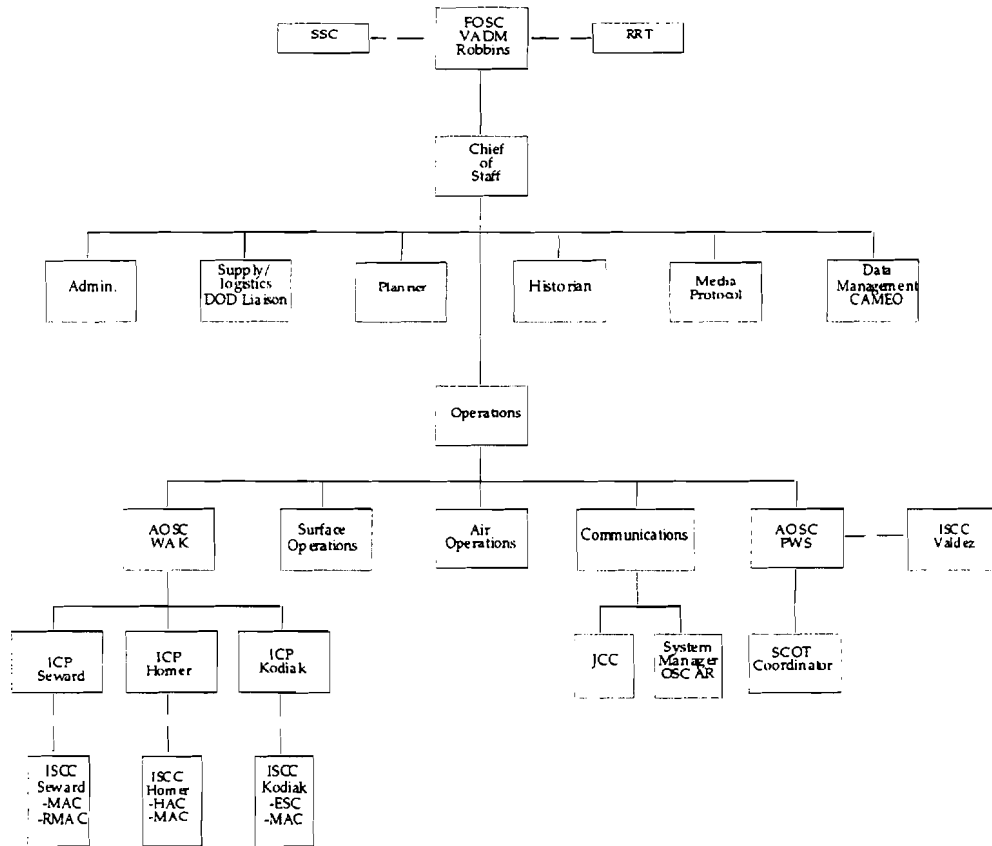


Figure 4.3. FOSC Organizational Chart (20 April 1989)

Source: USCG, "First Interim FOSC Report," 17 May 1991, no. F769, FOSC Exxon Valdez Archive.

Captain Roussel's command in western Alaska was marked by efforts to secure the necessary resources to mobilize a spill response that met not only his own expectations, but also those of the other organized interests of western Alaska. The need to take community interests into account when deploying cleanup resources to western Alaska was a fact of life that persisted throughout the spill response.

Captain Roussel appears to have taken an aggressive approach to requisitioning personnel and equipment to support operations in western Alaska. Securing the necessary supplies and equipment to generate an effective spill response in western Alaska was complicated by the needs of the huge response that was underway in Prince William Sound.<sup>62</sup> One result was considerable tension between what came to be seen by many as competing operations, a problem that was not resolved until the two OSCs were consolidated into one operation by Vice Admiral Robbins.

61. Vice Adm. C. E. Robbins, "Shoreline Cleanup Operations Organization for Valdez Oil Spill March 1989," 20 Apr. 1989, no. C629, FOSC Exxon Valdez Archive. Exxon's leadership opposed this decentralization of the response management (O. Harrison [Exxon], memorandum to Vice Adm. C. E. Robbins, 23 Apr. 1989, no. C18, FOSC Exxon Valdez Archive).

62. USCG Pollution Report, 6 April 1989 (WAK Polrep 1).

Captain Roussel felt that he encountered difficulties, as the leader of the "other" FOSC in the spill, in getting Exxon to respond to western Alaskan needs.<sup>63</sup> At one stage, early in the response, Exxon announced that it did not plan to develop a decentralized organization to deal with oil outside of Prince William Sound.<sup>64</sup> It seemed to Captain Roussel that Exxon spill managers were more inclined to deal with those in the Valdez area.<sup>65</sup> The western Alaska FOSC continued response activities during most of the spring period, but on 4 June, the final Polrep was issued from the Anchorage offices, and overall command of the entire response was shifted to Valdez.<sup>66</sup>

*Western Alaska Response Organizations.* The National Incident Management System (NIMS), operating through the U.S. Department of the Interior's National Park Service, was the basis for local organizational response arrangements in western Alaska. Incident command teams (ICTs), established initially in Seward out of concern for Kenai Fjords National Park but soon extended to Homer as well, would eventually give way to multi-agency advisory committees (MACs). Multi-agency advisory committees functioned as advisory bodies to the ICPs, and did not have specific decision-making authority.<sup>67</sup> They did, however, serve as useful forums for discussion and as a means of monitoring public sentiment. The ISCCs for the three western Alaska sectors (figure 4.4) of the spill cleanup, which would also be formally chartered by Vice Admiral Robbins in late April, grew out of the MACs and thus tended to reflect the variations in approach, philosophy, and membership found in the MACs themselves.

In Kodiak, the existence of the Kodiak Emergency Services Council (KESC) predated the spill itself. The Kodiak Emergency Services Council was an especially well organized agency. At its nucleus were the mayors of the city and borough of Kodiak, the city planner, and the commanding officer of the Coast Guard Support Center.<sup>68</sup> The MAC, which grew out of the KESC, also had in its membership representatives of state and federal land managers and seven Native villages. The Kodiak response was initially addressed by KESC on 1 April, and meetings were held, thereafter, on a daily basis (attended by Exxon representatives beginning in mid-April) through September, when they were reduced to a frequency of two-per-week. The meetings became the forum that local citizens used to air their concerns. Soon meetings were being videotaped and broadcast live on local television.<sup>69</sup>

The Kodiak Interagency Shoreline Cleanup Committee (KISCC) was created by Vice Admiral Robbins at the end of April. Chaired by the National Oceanic and Atmospheric Administration (NOAA), it functioned in an advisory role, helping to identify priority beach segments for cleanup and assisting on segment by segment

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63. Commanding officer (MSO Anchorage), memorandum to FOSC, 30 May 1989, no. C563, FOSC Exxon Valdez Archive.

64. Roussel, interview, 26 June 1991.

65. Morani, interview, 16 July 1991.

66. USCG Pollution Report, 4 June 1989 (WAK Polrep 63).

67. W. S. Hanable, "The Exxon Valdez Oil Spill and the National Park Service: A Report on the Initial Response," 1990, no. W351, FOSC Exxon Valdez Archive, 16.

68. Comdr. D. Maguire interview by Dr. T. Leschine (FOSC staff), 21 Aug. 1991, no. F771, FOSC Exxon Valdez Archive. The Coast Guard presence on KESC gave it a role at first unrelated to the spill response, as the Coast Guard supply base was Kodiak's largest employer. As the response progressed, commanding officer Capt. L. Black and his successor, Capt. E. Cummings, came to play a unique role as liaisons between the community and the ICP.

69. USCG, "First Interim FOSC Report," 22.

decisions. Final decisions were the responsibility of the ICP supervisor under authority provided by the FOSC.<sup>70</sup>

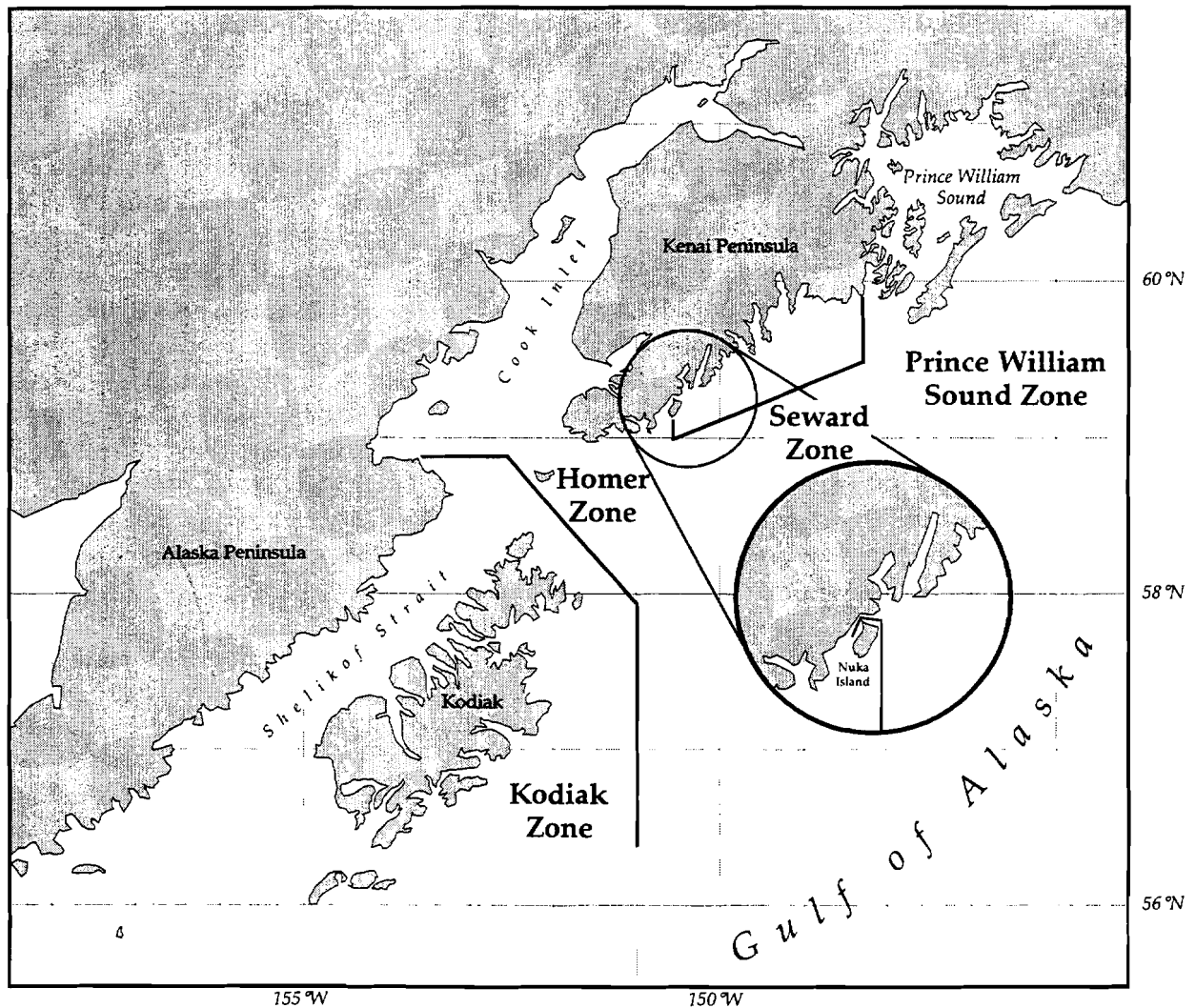


Figure 4.4. The three response sectors in the Gulf of Alaska were the Seward zone, the Homer zone, and the Kodiak zone.

In Homer, an agency known as the Homer Advisory Council was already in place when Coast Guard representatives arrived on 6 April. As in Kodiak, the initiative for Homer's early activities was the National Park Service's implementation of the Incident Command System (ICS).<sup>71</sup> The fact that each agency (Coast Guard and NPS) had initiated a response to the spill led to a jurisdictional dispute.<sup>72</sup> The matter was resolved with recognition that the Coast Guard had not only expertise in spill response, but the statutory authority. It was necessary to provide a continuing role for NPS, FS,

70. Ibid.

71. Hanable, 37–38.

72. A. D. Castellina (NPS), "The Seward Multi-Agency Coordination Group (MAC) Response To the Exxon Valdez Oil Spill," 14 July 1989, no. C977, FOSC Exxon Valdez Archive; Roussel, interview, 26 June 1991.



and the other local parties these organizations had brought into their own ICS response organization. In the words of Captain Roussel, NPS had "organizational, but not technical, expertise."<sup>73</sup> A Homer MAC eventually evolved, functioning with as many as twenty agencies (including Exxon in an observer status) serving in its membership. It made recommendations for cleanup priorities and approaches, and, like its counterpart in Kodiak, served as a forum for airing community concerns.<sup>74</sup>

The Incident Command System was also the basis for initial response-related activities in Seward. The first meetings of the Seward Multi-Agency Advisory Committee (a part of the ICP setup) were held on 29 March. Ten agencies, including the city of Seward, the NPS, U.S. Fish and Wildlife Service (FWS), Alaska Department of Natural Resources (ADNR), ADEC, Alaska Department of Emergency Service (ADES), Alaska Department of Fish and Game (ADF&G), the Chugach Alaska Corporation, the Cook Inlet Seiners Association, and the Kenai Peninsula Borough formed the official voting membership of the MAC, with the Coast Guard and Exxon holding non-voting participation roles in the group. A later evolution in Seward was the development of the Resource MAC, a subsidiary organization that brought technical expertise to the MAC structure. The Resource MAC made recommendations for priorities, operational protocol, and cleanup strategies to the MAC, who would, in turn, vote and pass the results (in the form of recommendations) to the Coast Guard.<sup>75</sup>

#### THE RESPONSE UNDER REAR ADMIRAL CIANCAGLINI (30 SEPTEMBER 1989–26 JUNE 1992)

Fundamental to understanding Rear Admiral Ciancaglini's organizational structure is recognition of the seasonal nature of the *Exxon Valdez* oil spill response. The weather and climatic conditions that forced suspension of field operations from September to April or May also necessitated downsizing the FOSC organization on a temporary basis. The cyclical process that drove cyclical changes in the FOSC organization itself started with:

- the mobilization of forces in the spring;
- conducting shoreline surveys to see what nature had done over the winter;
- treatment of the shorelines during the summer; and
- demobilization of equipment and people until the following spring.<sup>76</sup>

This process continued for three cleanup cycles and extended the amount of time required to complete the cleanup. But several benefits accrued:

- letting nature work on the shorelines over the winter;

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73. Roussel, interview, 26 June 1991.

74. USCG, "First Interim FOSC Report," 23.

75. Castellina, "The Seward Multi-Agency Coordination Group (MAC) Response To the Exxon Valdez Oil Spill."

76. Lt. Comdr. J. Whitehead, memorandum to FOSC, 30 Sept. 1989, no. C2455; and USCG, "FOSC Exxon Valdez Winter Plan, 1989-90," 1 Nov. 1989, revision 1, annex E, appendix 1, no. W102, 1; and Lt. Comdr. J. Adamek, facsimile to Capt. R. Luchun and Comdr. M. Pettingill, 9 Jan. 1990, no. W288, FOSC Exxon Valdez Archive. These references show the comparison of billet structures that depicts the cyclical nature of the organization.

- providing time to examine how well the cleanup had worked during the last season and to plan improvements for the next; and
- providing time to work out joint plans with the state, Exxon and other agencies and groups.

All the major participants in the response (FOSC, Exxon, and the state) adopted similar organizational approaches of maintaining skeleton staffs over the winter for planning and on going administration, and then gearing up fully for spring and summer field operations.<sup>77</sup>

#### DOWNSIZING AND CONSOLIDATION

The first organizational change Rear Admiral Ciancaglini oversaw was the late-1989 downsizing and consolidation of FOSC operations. Operations were moved from Valdez to Anchorage. While the move to Anchorage may initially have been considered temporary, it soon became a permanent arrangement. At the conclusion of summer 1989 operations, both Exxon and ADEC also transferred their headquarters to Anchorage. At a meeting of spill managers, held on 12 December, Exxon revealed plans to remain in Anchorage when the 1990 cleanup program resumed.<sup>78</sup> Anchorage offered advantages of both facilities and accessibility, and proved to be a superior location from which to conduct major operations. Another particularly important reason for the new location was the desire to locate at a more neutral and intermediate geographic setting. Some in western Alaska saw keeping the FOSC in the Prince William Sound area as signifying that western areas were being regarded as a lower priority. Anchorage, generally regarded as the hub of economic and service activity in Alaska, seemed to be a more logical choice.<sup>79</sup>

The move to Anchorage coincided with Rear Admiral Ciancaglini's centralization of the decision making for shoreline treatment embodied in the TAG process.<sup>80</sup> The centralization of decision making was accompanied by a transfer of operational control of field units from the ICPs (the case in 1989) to Anchorage. The roles of the three ICPs in western Alaska became more oriented to logistics, providing a conduit to the FOSC for local input and concerns and representing the FOSC in local matters. The centralization was a reflection of the reduced scale of operations for 1990 (approximately 10 percent of the 1989 level), the "emergency" phase of the response being over, and Rear Admiral Ciancaglini's desire for a smaller, more compact, and more efficient organization. In addition, the relationship between the FOSC and the MACs was evolving.

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77. O. Harrison (Exxon), letter to Rear Adm. D. Ciancaglini, 17 Aug. 1989, no. W1819; ADEC, "ADEC Shoreline Treatment Section, Winter Activities," 27 Sept. 1989, no. C2049; S. Provant (ADEC), letter to Rear Adm. D. Ciancaglini, 18 Aug. 1989, no. C1823; and USCG, "FOSC Exxon Valdez Winter Plan 1989-90," 1 Nov. 1989, no. W102, FOSC Exxon Valdez Archive.

78. O. Harrison (Exxon), letter to Rear Adm. D. Ciancaglini and D. Kelso (ADEC), 22 Jan. 1990, no. W307, FOSC Exxon Valdez Archive.

79. Capt. D. Zawadzki, interview by Lt. Comdr. R. Gaunt, 18 Feb. 1992, no. F186, notes, FOSC Exxon Valdez Archive.

80. Technical Advisory Group, "Spring Shoreline Assessment Program," 12 Feb. 1990, no. W464, FOSC Exxon Valdez Archive.

The FOSC, in response to a need to facilitate contact with the three MAC/ISCC groups that continued to function at Kodiak, Kenai Peninsula, and Prince William Sound, established the Sector Coordinating Group (SCG).<sup>81</sup> At the first meeting of the new organization (3 November), it was reported that discussions focused primarily upon issues that needed clarification from the FOSC.<sup>82</sup> The Sector Coordinating Group continued to function, holding meetings on a monthly basis, throughout most of 1990. Although the group did not have specific cleanup decision-making authority, it served a useful function as a conduit for information, and as a sensing mechanism for issues in the field.

Multi-agency advisory committees and ISCC meetings were continued through the summer months of 1990. The Prince William Sound MAC held sessions at Anchorage. The Homer MAC evolved into the "super MAC," which came to represent the entire Kenai Peninsula area, and which included Kenai. Mayor Don Gilman was instrumental in assuring a continuing good working arrangement with the Kenai Peninsula Borough, even after the late-summer closing of ICP centers at Homer and Seward.

By the close of the 1990 cleanup season, there no longer appeared to be either a need nor a role for the ICPs. Additionally, the MACs' role was also significantly diminished. The last ICP was closed in September of 1990 and the MACs also ceased playing a vital function that year.<sup>83</sup>

#### THE OPERATIONS STEERING COMMITTEE

On 3 October 1989, the first meeting of the public Operations Steering Committee (OpsSteering) was held. The session took place at the Calais II building in Anchorage, a location that served as headquarters for Exxon's winter operations. The purpose of the OpsSteering Committee was to bring together, on a regularly scheduled (monthly) basis, the principal agencies in the response and to provide an on going public information forum. Sixty persons were on hand for the first meeting (including media representatives).<sup>84</sup>

The format of a typical OpsSteering Committee meeting consisted of a series of reports, usually provided by representatives from each lead agency in the response. Progress updates and information about plans for future operations were emphasized. Agency policy changes affecting operations were often announced at OpsSteering Committee meetings.

The FOSC also wanted to encourage an atmosphere of openness, and to make the details of progress and planning for the cleanup accessible to the general public. Meetings were publicized well in advance, and time was provided for questions and comments from attendees. This forum for open discussion of issues and concerns

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81. The Kenai element consisted of representatives of Seward, Homer, and Kenai, which had previously joined forces to form what they called the "super MAC."

82. USCG, Sector Coordinating Group's meeting summary, 3 Nov. 1989, no. W940, FOSC Exxon Valdez Archive.

83. USCG Pollution Report R 102344Z September 1990 (PWS Polrep 298), sec. (1)(C).

84. USCG, "Operations Steering Committee" (summary of meeting, 3 Oct. 1989), no. W266, FOSC Exxon Valdez Archive.

provided a counter balance to the closed format of Technical Advisory Group (TAG) meetings, which was controversial.<sup>85</sup> The sessions were normally chaired by the FOSC, or by his representative, and ordinarily took place at the Anchorage Federal Building.<sup>86</sup>

In all, nineteen public Operations Steering Committee meetings were held during the period of 1 October 1989 through 2 July 1991. Sessions were held on a monthly basis during the winter 1989–90 period. Throughout the summer of 1990 the committee met on a twice a month basis. No sessions were held during October 1990 through March of 1991. Monthly gatherings were resumed from March through July, 1991.<sup>87</sup> There was usually active audience participation at OpsSteering meetings, though participation eventually came to be dominated by the few “regulars” who were nearly always present. On 2 July 1991, at the conclusion of the final OpsSteering gathering, Rear Admiral Ciancaglini thanked the participants and public for cooperation, and closed by assuring everyone that he would continue to be available, and that “his door was always open.”<sup>88</sup>

#### OTHER ORGANIZATIONAL RESOURCES AVAILABLE TO ASSIST THE FOSC

A substantial amount of immediate help, in the form of marine pollution response personnel and technical assistance, was provided by the various “special forces” that are identified in the NCP and the regional contingency plan (RCP). Commander McCall very quickly requested assistance from the Alaska Regional Response Team (RRT), the National Strike Force (NSF), the NOAA scientific support coordinator (SSC), and the 17th Coast Guard District’s Emergency Task Group (DETG).<sup>89</sup>

#### ALASKA REGIONAL RESPONSE TEAM

The RRT, like other regional response teams, “supports emergency responders at all levels by means of technical expertise, equipment, and other resources.”<sup>90</sup> It is comprised of representatives from thirteen federal and state agencies. In accordance with the NCP, the FOSC may call upon these agencies “during the planning or implementation of a response to provide assistance in their respective areas of expertise...consistent with agency capabilities and legal authorities.”<sup>91</sup>

Before the *Exxon Valdez* spill, the RRT had published two reports of significance to two of the most controversial decisions in which Commander McCall found himself embroiled in the spill’s early days: the decision to use dispersants on the spill, and the decision to employ in situ burning (both are covered in more detail elsewhere in this

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85. The Technical Advisory Group is discussed in the shoreline cleanup chapters.

86. USCG, “Operations Steering Committee” (summary of meetings), 3 Oct. 1989, no. W266; 7 Nov. 1989, no. W112; 12 Dec. 1989, no. W412; 20 Feb. 1990, no. W545; 20 Mar. 1990, no. W606; 17 Apr. 1990, no. W806; 8 May 1990, no. W915; 22 May 1990, no. W1257; 12 June 1990, no. W1300; 26 June 1990, no. W1313; 10 July 1990, no. W1315; 24 July 1990, no. W1328; 14 Aug. 1990, no. W1341; 28 Aug. 1990, no. W1423; 11 Sept. 1990, no. W1976; 23 Apr. 1991, no. F820; 21 May 1991, no. F823; 11 June 1991, no. F822; and 2 July 1991, no. F821, FOSC Exxon Valdez Archive.

87. Ibid.

88. USCG, “Operations Steering Committee,” 2 July 1991.

89. USCG, “Marine Safety Manual,” Commandant’s Instruction no. M16000.7, vol. 6, ch. 7, fig. 2. The manual shows the decision logic which leads to activation of these organizations.

90. Skinner and Reilly, 5.

91. 40 CFR 300.23 (b).

report). The RRT had published dispersant use guidelines for the FOSC on 1 March 1989.<sup>92</sup> In December 1988, it had likewise developed checklists to use for in situ burning decisions.<sup>93</sup> Whether or not those documents contemplated a spill the size of the *Exxon Valdez* casualty and the quantities of dispersants that would be needed, is unclear.

Though Commander McCall took the initiative in assuming the role of FOSC, many other voices sought to be heard in the earliest days of the response. Those who were present reported that the combination of mentally gearing up to the magnitude of the catastrophe, and realizing how limited were the available resources, took a substantial toll on the ability to think carefully through the available options. This was not a situation that the RRT could resolve; nor was the RRT immune from the same difficulties.

When the authority of the FOSC was elevated through the installation of the flag officers who followed Commander McCall, the importance of the RRT was correspondingly diminished. As the Coast Guard command structure continued to evolve in ways unanticipated in the NCP, the appropriateness of the RRT for its intended role came more and more to be questioned.<sup>94</sup> As the cleanup phase of the spill got into high gear, the FOSC came to rely more and more on what started out as purely ad hoc arrangements to provide a technical basis for decision making. Conflict among agencies limited decision making regardless of the avenues employed, however, and hampered the RRT in particular.

The RRT contributed to discussions on a broad array of issues, and its level of involvement was high:

The Alaska Regional Response Team was actively involved in the decision making process on several issues. The ARRT met [in teleconference] daily for the first sixty (60) days of the spill, and then on a weekly basis until the middle of September. During the first hours and days of the spill the ARRT provided information and recommendations on the protection of critical shoreline areas.<sup>95</sup>

#### NATIONAL STRIKE FORCE

The National Strike Force (NSF) at the time consisted of two strike teams established by the Coast Guard: one assigned to the Coast Guard's Pacific Area (PST) at Hamilton Air Force Base in California, and a second assigned to the Atlantic Area (AST), headquartered in Mobile, Alabama. The strike team's primary mission is to provide expert support to the FOSC in the form of on scene technical assistance, communication support, safety monitoring, operational monitoring of the responsible party's cleanup, and cost documentation.

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92. Alaska Regional Response Team, "Oil Spill Dispersant Use Guidelines for Prince William Sound," no. C953, FOSC Exxon Valdez Archive. Guidelines were effective 1 Mar. 1989.

93. Capt. G. Haines (RRT), letter to Vice Adm. C. Robbins, 10 May 1989, no. C78, FOSC Exxon Valdez Archive.

94. USCG, "G-MER Conference Report," Vice Adm. Robbins comments. The inability of the RRT to resolve crucial questions on waste disposal, the use of chemical shoreline cleaners, and other matters is discussed at several places in this report.

95. Comdr. S. Tiernan, letter to Lt. Comdr. J. Whitehead, 3 Jan. 1990, no. W1975, FOSC Exxon Valdez Archive.

Nine members of the PST augmented the MSO Valdez staff on day two of the spill.<sup>96</sup> They were assigned the missions of lightering and salvaging the vessel, staging barrier skimming systems, and implementing the FOSC's cleanup strategies. As the spill response progressed, the PST was supplemented by personnel from the AST, and together they remained in Alaska as important FOSC resources.<sup>97</sup>

Personnel from the strike teams played an especially important role in the difficult and somewhat precarious task of lightering and stabilizing the *Exxon Valdez*.<sup>98</sup> Many Coast Guard personnel have felt that successful completion of those important tasks represented a vitally important development, but one that was underappreciated and largely unrecognized outside Coast Guard ranks. As the response organization was being structured, strike team members often filled important "in the ranks" positions, thus lending experience and a core of personnel with strong technical capabilities.

#### NOAA SCIENTIFIC SUPPORT COORDINATORS (SSCs)

Scientific support coordinators are provided by NOAA at the request of the FOSC. The NCP states that "during a response, the SSC...is responsible for providing scientific support for operational decisions and for coordinating on-scene scientific activity."<sup>99</sup>

At 0600 on the day the spill occurred, MSO Anchorage relayed a request to NOAA to calculate the spill's probable path and identify environmental resources that might be at risk. Six members of NOAA's hazardous materials response team, together with a NOAA helicopter, arrived in Valdez on the evening of 24 March. Over the spill's first six months, some thirty NOAA spill-response specialists served in Valdez, Seward, Homer, Kodiak, and Anchorage. The NOAA experts synthesized and interpreted for the FOSC the enormous volume of technical advice being provided by the scientific community.<sup>100</sup>

National Oceanic and Atmospheric Administration technical specialists used information obtained from overflights, together with weather, tide, and current data, to develop a spill trajectory model. Remote sensing data obtained from a Coast Guard side-looking airborne radar (SLAR) unit, mounted on an aircraft, was used to verify the model and, throughout the period during which oil remained visible on the water, to inter-calibrate the observations of Exxon, ADEC, and the Coast Guard on a daily basis. In addition, discussions with resource agencies and literature reviews were used to identify sensitive resources that might be at risk due to the spill. The National Oceanic and Atmospheric Administration also provided laboratory support for the analysis of samples of oil and tissue collected by NOAA and other resource agencies, both federal and state.<sup>101</sup>

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96. Comdr. G. A. Reiter, "Summary of PST Offloading Operations Aboard the T/V Exxon Valdez, 25 March to 4 April 1989" (undated memo received by OSC report staff, 12 Mar. 1990), no. W629, FOSC Exxon Valdez Archive.

97. CWO K. Darby, interview by Lt. Comdr. R. Gaunt, Anchorage, 14 Jan. 1993, no. F734, tape; and USCG, "FOSC Exxon Valdez Personnel Roster," no. W346, FOSC Exxon Valdez Archive.

98. This is discussed more fully in chapter 2, "Vessel Stabilization, Lightering, and Salvage."

99. 40 CFR 300.34.

100. S. Christopherson et al., "Exxon Valdez Oil Spill" (report documenting NOAA's response from 24 March–20 Sept. 1989), Feb. 1990, ed. L. Harris, no. W1947, FOSC Exxon Valdez Archive.

101. Ibid.

Senior-level Hazard Materials Response Branch personnel and SSCs served as technical and scientific advisors to the FOSC.<sup>102</sup> In addition, other NOAA SSCs and support personnel chaired or served as scientific-technical liaison to the advisory committees, which became important components of the spill organization developed by Vice Admiral Robbins. These included the Prince William Sound Interagency Shoreline Cleanup Committee (NOAA chair), the Research and Development Committee (NOAA co-chairs), the Inter-agency Resource Meeting (also known as "the science meeting"; NOAA chair), and the multi-agency advisory committees, or MACs, formed in Seward, Kodiak, and Homer (NOAA liaison).<sup>103</sup>

#### SEVENTEENTH COAST GUARD DISTRICT EMERGENCY TASK GROUP (DETG)

In accordance with the Alaska Regional Contingency Plan, the Seventeenth Coast Guard District had established a predesignated emergency task group to supplement the FOSC's staff. This group, comprised of specialists in environmental response, legal affairs, public affairs, contracting, and communications, was called upon for assistance by the FOSC in the *Exxon Valdez* response. Members of the group arrived at the spill site on the day of the incident, and with other special forces augmented the MSO staff.

#### DEPARTMENT OF DEFENSE SUPPORT

In addition to calling for the Skinner/Yost involvement in the response, the president directed the secretary of the army to initiate U.S. Department of Defense (DOD) support for the spill. On 6 April, therefore, the director of military support (DOMS) operation was activated at the Pentagon's Army Operations Center in Washington. Instructions were given to establish a special Alaska Oil Spill Task Force (AOS-TF). The already existing Joint Task Force-Alaska (JTF-AK) was not activated owing to the Joint Chiefs of Staff feeling that it would be inappropriate for JTF-AK to involve itself in a matter which was a civil, rather than a military emergency.<sup>104</sup> (The Joint Chiefs of Staff were also focused upon military concerns in Panama at the time.) Although the term "JTF" was commonly used in referring to AOS-TF operations, the DOD involvement that occurred was not a true JTF-AK undertaking. The director of military support designated Lieutenant General Thomas G. McInerney, commander of the Alaskan Air Command, as the on-site senior defense representative and commander of the AOS-TF.<sup>105</sup>

General McInerney saw merit in making use of the JTF structure, even though JTF was not itself activated. It was an already organized system that could be readily adapted for service in the response. The JTF-AK staff thus became the Alaska Oil Spill Task Force staff. Early Alaska Air Command deliberations apparently argued for use of the "JTF" label as well. It would not be necessary to explain later why JTF had not been employed,

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102. D. Kennedy (NOAA), interview by Dr. T. Leschine (FOSC staff), Seattle, 28 June 1991, no. F736, notes; and S. Christopherson (NOAA), interview by Dr. T. Leschine, Seattle, 28 June 1991, no. F734, notes, FOSC Exxon Valdez Archive. NOAA's D. Kennedy and J. Robinson served as rotating direct advisors to the OSC throughout the spill's first summer.

103. Christopherson et al.

104. W. S. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 1990, no. W1325, FOSC Exxon Valdez Archive, 13-15.

105. Col. M. V. Plumb, Jr. (JTF-AK), memorandum to DAMO-OD, 20 Dec. 1989, no. W379, FOSC Exxon Valdez Archive, 2.

and if the organization was referred to simply as "the JTF," it would not be necessary to explain whether the reference was to JTF-AK or to AOS-TF. The term "JTF" was applied to "most oil spill actions taken by the [AOS-TF] staff," according to the Alaskan Air Command.<sup>106</sup>

A Joint Task Force Center was opened on 7 April, at the Alaskan Air Command headquarters, located at Elmendorf AFB, for the purpose of providing assistance in coordinating military support. Assistance came in the form of "support for transportation, equipment, personnel, billeting, logistics command, and control." A Joint Movement Center (JMC) and a Logistics Readiness Center (LRC) were established to coordinate logistics.<sup>107</sup> Though there may have been some tendency among news media representatives to look to General McInerney as the government's lead spokesman, owing to his three-star rank, McInerney himself clearly recognized that the DOD's role was one of providing assistance as needed to the FOSC. General McInerney and Vice Admiral Robbins had known one another from a prior assignment in Hawaii, and had an ability to work "extremely well together."<sup>108</sup>

The Joint Task Force operation involved personnel from the U.S. Air Force, U.S. Navy, U.S. Marine Corps, and the U.S. Army, as well as civilian personnel from the DOD. During the period from April–September 1989, a daily average of 787 DOD personnel were present, with the high-water mark occurring on 12 June, when 1,413 DOD personnel were participating. Vice Admiral Robbins termed the quality of support lent by military airlift command aircraft and crews as "fantastic."<sup>109</sup>

The president's declaration that "military support would be provided" for spill operations led to the speculation, particularly within the media, that federal troops might be pressed into service to perform manual cleanup labor on oiled beaches. This arrangement was seriously considered, and in fact, had been tentatively approved by Vice Admiral Robbins.<sup>110</sup> Exxon opposed the idea, preferring instead to hire its own shoreline workers and support personnel for the task of performing cleanup operations.<sup>111</sup> But as outlined elsewhere in this report, there were other reasons why this level of military involvement was not a sound idea.

## SUMMARY

Actually setting the machinery in motion to mount an effective offensive against the spill during its initial seventy-two hours proved to be vastly more difficult than expected.<sup>112</sup> Much has been said in the press and in post-spill analyses about the failure to contain and control the spill during those crucial first three days. From the standpoint of those closest to efforts to contain the spill in its earliest days, the

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106. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 17.

107. Plumb, memorandum to DAMO-OD, 20 Dec. 1989.

108. Lt. Gen. T. McInerney (Alaskan Air Command), interview by Lt. Comdr. R. Gaunt, Anchorage, 15 June 1992, no. F668, tape, FOSC Exxon Valdez Archive.

109. Vice Adm. C. Robbins, comments on draft of this chapter, 21 Jan. 1992, no. F775, FOSC Exxon Valdez Archive.

110. Ibid.

111. B. Dietrich, "A Not So Slick Bureaucracy," *The Seattle Times*, 11 Apr. 1989.

112. Thompson, interview, 19 July 1991.



following factors appear to have been especially instrumental in limiting the leadership's ability to cope with it:

1. The sheer size of the spill, in terms of both volume and extent, surpassed what had previously been even imagined. In Commander McCall's opinion, even in an ideal scenario, deployment of existing resources in the Valdez area would (still) have been overwhelmed by the mass of oil that had been discharged from the tanks of the *Exxon Valdez*.<sup>113</sup> Steve Cowper, Alaska's governor, toured the spill area on Saturday and concluded: "We simply don't have enough equipment to contain it. No one does. You couldn't contain it with all the equipment in North America."<sup>114</sup> From the point of view of operations experts, at best 20 to 25 percent of the spill could have been picked up with all the equipment that could possibly have been marshaled working perfectly, especially given the intense storm that occurred on the spill's fourth day.<sup>115</sup>
2. There was an inability to secure consensus (and some ambiguity in regulatory requirements) about just what ought to be done. This problem was further complicated by debates over the authority of the FOSC to assume the actual lead role in the response. Exxon, in assuming responsibility for the cleanup from Alyeska, sought to employ both chemical dispersants and in situ burning while the oil remained in a relatively small area. The Alaska Department of Environmental Conservation, despite the existence of previous agreements for dispersant use, was reluctant to permit their application. The ADEC spokesmen noted fears for the longer term ecological effects such application might bring.<sup>116</sup> While testing was considered acceptable, state environmental authorities never approved full-fledged use and the window during which dispersants could be effectively applied soon passed.<sup>117</sup> In the meantime, attempts were being made to contain the oil by use of booms, even though the available skimmers and storage vessels were far fewer than a spill of this size demanded. While many on scene felt that dispersants should have been used as a first line of defense,<sup>118</sup> current regulations delineating the duties of the captain of the port in his FOSC capacity retain a bias for the use of mechanical recovery over other means of spill control.<sup>119</sup>

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113. McCall, interview, 29 July 1991.

114. Dietrich, "Anger, Frustration in Valdez," 26 Mar. 1989.

115. USCG, "G-MER Conference Report," conversation between Vice Adm. Robbins and Comdr. Reiter.

116. B. Lamoreaux and B. Baker (ADEC), letter to Comdr. S. McCall, 28 Mar. 1989, no. C939, FOSC Exxon Valdez Archive.

117. Comdr. D. D. Rome, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. Comdr. H. Young, 22 Aug. 1991, no. F109, tape, FOSC Exxon Valdez Archive.

118. McCall, interview, 29 July 1991.

119. 33 CFR 153.305 (a). Part (a) stipulates, "Use to the maximum extent possible mechanical methods and sorbents."

3. The task of assembling needed equipment, personnel, and logistical support to deal with the spill was greatly complicated by the remoteness and small size of the town of Valdez. Moreover, the vast size of Prince William Sound, and even greater remoteness of many areas affected by the spill, meant that an additional set of rather severe logistical constraints had to be faced even with the necessary people and material on scene in Valdez and other support bases. Barges that were used in the cleanup often needed to be brought from distant ports, for instance, thus necessitating several days of delay while the equipment was en route. Beach cleanup monitors in the field, particularly in western Alaska where even greater distances between oiled sites and support bases were involved, often found themselves left in the theater of operations for much longer times than anticipated due to the difficulties of getting relief crews to them. Yet many outside the spill area, particularly in Washington, D.C., continued to believe that controlling the spill was just a matter of getting all of the equipment into the area immediately and cleaning it up by simply driving down to the beach and cleaning it up. After all, on a map, Prince William Sound seemed to resemble Chesapeake Bay, a body of water which is substantially more accessible than any portion of the spill area. Commander McCall felt that misconceptions held by outside officials about the characteristics of the response area led to oversimplifications about what needed to be done to effect a cleanup.
4. There was intense, and heretofore unprecedented, media and political pressure on those in charge of the spill, driven by perceptions that events in Prince William Sound were "out of control" and that, in Valdez, "no one was in charge." Those removed from direct involvement in the cleanup tended to oversimplify the complexities that had to be dealt with in staging cleanup effort.

The limitations that so affected the first seventy-two hours of the response tended to diminish in importance as time wore on. But new limitations would arise, serving to underscore the inability of an NCP-derived organization to function as intended, and creating the impetus to find an organizational structure that could meet rapidly changing and unique demands.



## CHAPTER 5. EXXON RESPONSE ORGANIZATION

### OVERVIEW

In meeting the requirements of 33 CFR 153, subpart C, which lays out the methods and procedures for the removal of discharged oil, Exxon conducted the largest ever oil spill cleanup effort. In 1989 Exxon established an organization with over eleven thousand people, fourteen hundred vessels, and eighty-five aircraft to deal with the oil spilled from the *Exxon Valdez*. The way the company went about organizing and conducting its response is presented in this chapter.

### BACKGROUND: ALYESKA'S INITIAL RESPONSE

Alaska law requires preparation of contingency plans for a variety of situations.<sup>1</sup> An oil spill contingency plan is intended to ensure that adequate planning has been provided for appropriate response to any spill. At Valdez the pipeline terminal operator, the Alyeska Pipeline Service Company, held responsibility for maintenance of a contingency plan that had been agreed upon in 1987. Agreement required the approval of Alaska Department of Environmental Conservation (ADEC), though provisions in effect in 1989 stipulated only minor sanctions for failing to follow the plan. Locally produced response plans should function in harmony with other (federally) sponsored emergency plans, including the National Contingency Plan.<sup>2</sup>

In 1989, Alyeska's spill contingency planning had an extended history of contention and disagreement. Questions usually involved the state of preparedness of response capabilities. Often ADEC spokesmen charged that capabilities were deteriorating, manning standards inadequate, and Alyeska's ability to deal with larger spills was in serious doubt. The response system was periodically tested, both in drills and in actual spill situations. The T/V *Thompson Pass* spill, on 3 January 1989, was the most recent response preceding the *Exxon Valdez* oil spill.<sup>3</sup> In a post spill review of the incident, the principal parties were not in agreement: Alyeska felt that its response had produced a commendable effort, but state authorities were critical and saw need for substantial improvement.<sup>4</sup> The episode was similar to long standing disputes that had periodically surfaced beginning in the 1970s.

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1. Federal law (33 U.S.C. 1231) and regulations (33 CFR Part 154) require an operations manual for each marine facility capable of transferring oil in bulk to a vessel with a capacity of greater than 250 barrels. The regulations also require the operator of the facility to include, "The procedures to be followed if the cargo spills or leaks" (33 CFR 154.310[a][5][f]). Alyeska complied with the regulations. However, under the Trans Alaska Pipeline Act, Alyeska was required to submit a far more extensive contingency plan that included response in Prince William Sound. The state of Alaska (ADEC) was given the responsibility of reviewing and approving the Alyeska contingency plan.

2. Alaska Oil Spill Commission, Implications for Safe Transportation of Oil, in "Spill: The Wreck of the Exxon Valdez," Feb. 1990, no. W1593, FOSC Exxon Valdez Archive, 37.

3. *Ibid.*, 57.

4. Dan Lawn, an ADEC supervisor in the Valdez area, and often heard critic of Alyeska's response programs graded the *Thompson Pass* operation with a "C," based on his multi-element criteria. George Nelson, Alyeska's former president, stated that the *Thompson Pass* work had been "excellent," and pointed to similar statements from Dennis Kelso, ADEC commissioner.

Spill response planning, prior to the *Exxon Valdez* grounding, involved conceptual estimates about potential size of spills that might occur in the contingency plan area. In 1986, an Alyeska attorney, while discussing the contingency plan with state representatives, stated the "most likely" spill would be "in the 1,000 to 2,000 barrel range."<sup>5</sup> Critics of the *Exxon Valdez* response often maintained that Alyeska's capabilities were geared to the "most likely" spill, rather than a massive spill (*Exxon Valdez*) which could overwhelm the response system. Alyeska's 1987 contingency plan contained details for dealing with a 200,000 barrel (8,400,000 gallons) spill, but called the prospect of such an event "highly unlikely" and made no real provisions for dealing with such an event. The contingency plan was approved by the state on 11 June 1987.<sup>6</sup>

The 1987 Alyeska Oil Spill Contingency Plan was published in fifteen volumes. It consisted of procedures for dealing with spills occurring within Prince William Sound and along the pipeline itself. In addition, the plan contained detailed information about the response area, equipment lists, job descriptions for responders, and a general plan for conducting response operations. Volume three of the plan profiled two hypothetical scenarios, a "most likely" spill and a "catastrophic" event.<sup>7</sup>

The Alyeska plan's 200,000 barrel spill projection envisioned several measures that actually materialized during the *Exxon Valdez* response. The plan called for dispersants and open-burn tactics, assuming authorization for their use could be arranged. The Coast Guard Pacific Strike Team and the International Bird Rescue Research Center would be summoned. Joint meetings would begin, involving state and federal agencies, including the Coast Guard. Response equipment and manpower would be sent to the scene of the spill, according to an estimated time schedule. Efforts were to be initiated to secure additional equipment from cooperatives and other private sources. The Main Bay fish hatchery would be boomed, despite the "unlikely possibility" that spilled oil would extend to that area.<sup>8</sup> (Alyeska's model was developed from a hypothetical spill taking place in June, and located "approximately 30 miles" from the terminal.)<sup>9</sup>

The plan made other assumptions that later proved to be correct. The response would be beyond the capabilities of Alyeska's personnel and equipment, and "outside" help would need to be secured quickly. Also accurately predicted was the need to establish cleanup priorities and accept that the response would be a longer term project. Generally, the large-scale response "scenario" proved to be reasonably accurate, though it did not presuppose the broad spread of spilled oil nor the resources required to respond to it.<sup>10</sup>

The plan directed that an unspecified number of tug boats, a contingency barge, two mooring launches, four Monark small boats, and an assortment of skimming,

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5. Alaska Oil Spill Commission, 55.

6. *Ibid.*, 56.

7. Alyeska Pipeline Service Company, "Oil Spill Contingency Plan," 1987, volumes 1-3.

8. *Ibid.*, vol. 3, 54-55.

9. Bligh Reef, upon which the *Exxon Valdez* came to rest, is located about twenty-eight miles from the terminal, a position remarkably close to the spot of Alyeska's hypothetical vessel casualty.

10. Alyeska Pipeline Service Company, "Oil Spill Contingency Plan," vol. 3, 54-55.

booming, and lightering gear would be available, with the first equipment arriving 1.5 hours after the spill, and other gear on hand within 3.5 hours.<sup>11</sup> The initial response did not, however, unfold as projected by Alyeska's contingency plan.

Several factors contributed to what proved to be a slow response. The spill happened on Good Friday (the first day of a three-day Easter weekend) and the terminal was functioning with a smaller than normal work force. The contingency barge, having suffered recent structural damage, was unloaded and in the process of being repaired. Though it was seaworthy, it had to be loaded before deployment. That task proved to be formidable. Response gear, normally aboard the contingency barge, was stored in an area that was unprotected and thus covered with snow. A particularly problematic task involved positioning and loading contingency barge cargo. When only one power-equipment operator was mustered, that person had to man both the forklift (for moving gear to the barge area) and the barge loading crane.<sup>12</sup> As a result, the barge reached the spill site several hours later than specified in the contingency plan.

Whether a more timely response would have made a significant difference is debatable. Some authorities, including the Federal On Scene Coordinator (FOSC), felt even a perfectly executed deployment of Alyeska response resources would have been overwhelmed by the volume of oil.<sup>13</sup> The Alaska Oil Spill Commission concluded, however, that "with a well-prepared contingency plan, well implemented, the disaster of the *Exxon Valdez* could have been far less serious."<sup>14</sup> It is not clear whether the commission was suggesting a need for added equipment and manpower, or implying that the problem was one of having and carrying out a more effective set of response procedures.

The National Transportation Safety Board (NTSB) made several observations concerning Alyeska's response efforts. Alyeska suffered criticisms from some observers because its contingency barge was not loaded and better prepared for immediate deployment. The NTSB noted, however, that the spill contingency plan had not specifically required that the barge be loaded at all times. Another question addressed by the NTSB involved responsibility for the cleanup. The contingency plan contained no specific provision for transferring cleanup responsibility from Alyeska to the company that owned the vessel. Citing the remote location of Prince William Sound, the NTSB specifically suggested that procedures be developed for the smooth transition of cleanup responsibility from Alyeska to the vessel owners or operators. The new responsible party should not only assume financial responsibility for the cleanup, but

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11. Ibid., vol. 3, 55. The National Transportation Safety Board stated flatly, "The 10-hour loss [of time] had no material impact on the cleanup because of the size of the spill" (National Transportation Safety Board [NTSB], "Marine Accident Report: Grounding of the U.S. Tankship Exxon Valdez on Bligh Reef, Prince William Sound Near Valdez, Alaska, March 24, 1989" [report no. NTSB/MAR-90/04, 31 July 1990], no. W1962, FOSC Exxon Valdez Archive, 145).

12. Alaska Oil Spill Commission, 17.

13. Comdr. S. McCall, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, Lt. T. Staats, and Lt. Comdr. H. Young, Anchorage, 29 July 1991, no. F111, tape, FOSC Exxon Valdez Archive. McCall indicated that even if the boom and skimmers had arrived on scene five hours after the spill they would still have been overwhelmed by the oil.

14. Alaska Oil Spill Commission, 58.

should also, according to the NTSB, be prepared to execute its own carefully considered and pre-planned response plan.<sup>15</sup>

Alyeska's role as the responsible party proved to be short-lived. Exxon authorities began arriving at Valdez within twenty-four hours of the grounding. The precise moment that Exxon assumed control of the response is not clear, but one source revealed that (at 0545 on 24 March) Frank Iarossi, president of Exxon Shipping Company, advised Alyeska Emergency Center that "Exxon is mobilizing a spill team" for service in Alaska.<sup>16</sup> That team, including Iarossi himself, arrived in Valdez at 1737 on 24 March.<sup>17</sup> Alyeska personnel remained involved in the response providing manpower and equipment in the field. By 25 March, however, Alyeska was taking response directions from Exxon authorities.

Alyeska moved into a supporting role as Exxon began the prolonged task of serving as responsible party. The pipeline terminal, closed during the first hours of the spill, was declared reopened (on a limited basis) on 28 March.<sup>18</sup> That meant that Alyeska personnel needed to return to normal stations to resume port operations.<sup>19</sup> Alyeska remained at least peripherally involved in the response.<sup>20</sup> The terminal's settling tanks were, for example, used for the handling of oily wastewater.<sup>21</sup> An industrial incinerator operation at Alyeska served solid waste disposal needs until other arrangements could be made. Alyeska yielded its role as the primary responder to Exxon within twenty-four hours following the grounding.

## EVOLUTION OF THE EXXON RESPONSE ORGANIZATION

Exxon Corporation is a large multinational corporation that is basically divided along domestic and international lines. The domestic side is anchored by Exxon Company, USA, and Exxon Company, International, leads in foreign operations. Additionally, there are three other divisions of the corporation: Exxon Central Services, Exxon Chemical Company, and Exxon Coal and Mineral Company. Moreover, two affiliated companies, Exxon Production Research Company and Exxon Research and Engineering Company serve both the domestic and international arms of the corporation. The third

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15. NTSB, "Marine Accident Report: Grounding of the U.S. Tankship Exxon Valdez on Bligh Reef, Prince William Sound Near Valdez, Alaska, March 24, 1989," 146. Otto Harrison, in a 24 June 1992 interview with the FOSC historian staff, alluded to an Exxon corporate procedure for responding to spills. That arrangement was, however, a general plan, when the NTSB was recommending something specifically oriented to the Valdez region.

16. Alyeska Pipeline Service, "Supplemental Twenty-Four Hour Chronology of Events Following the Grounding of the Exxon Valdez, March 24, 1989," 24 Mar. 1989, no. C1002, FOSC Exxon Valdez Archive, 11.

17. Alaska Oil Spill Commission, T/V Exxon Valdez Oil Spill Chronology, in "Spill: The Wreck of the Exxon Valdez," 61.

18. USCG Pollution Report O 282308Z March 1989 (PWS Polrep 10), sec. (2)(1).

19. Comdr. S. McCall, letter to W. D. Howitt (Alyeska), 14 Apr. 1986 (*sic*), no. C951, FOSC Exxon Valdez Archive. Comdr. McCall discussed a small spill that took place at the terminal on 27 and 28 March (SS *Beaver State*). The letter suggests that Alyeska may have (at the moment) had a shortfall of personnel available to maintain a spill response. Though it is not specified or directed in the letter, the situation may have influenced Alyeska to make a priority of having its resources restored to normal stations.

20. J. Runnels (Alyeska), letter to Capt. A. Alejandro, 12 June 1989, no. C522, FOSC Exxon Valdez Archive. The letter specified that Exxon had released one of Alyeska's skimmers on 2 Apr. 1989, and the other on 10 Apr. 1989. An additionally assigned U.S. Navy skimmer was projected to remain at the terminal on "standby" through 1 Aug. 1989.

21. B. Lamoreaux (ADEC), letter to A. Dailey (EPA), 19 July 1989, no. C1144, FOSC Exxon Valdez Archive. The letter described conditions of a special agreement to permit the arrangements, and provided ADEC approval for Exxon to use terminal facilities for oily wastewater processing. The products involved included runoff from waste handling facilities, heat-separated oily water from skimmers, and that from kelp washing and incinerator barges.

affiliated company is Imperial Oil Limited. Exxon Company, USA, is the largest division of the corporation and has a number of subsidiaries which include Exxon Shipping Company, Exxon Pipeline Company, Exxon Gas Systems, Incorporated and Monterey Pipeline Company (figure 5.1). Foreign operations such as Esso Australia and Esso Europe are subsidiaries of Exxon Company, International.

In the event of a pollution incident involving an Exxon asset that exceeds the capacity of the local Exxon organization to respond, the corporation's Emergency Response Team (ERT) is activated. The size of the ERT dispatched is dependent on the size and nature of the pollution incident. The ERT is composed primarily of employees for whom response is a collateral responsibility. The arrangement is not too dissimilar to a volunteer fire department. However, the skills and expertise of the employee's principal job usually cross over to their role in the ERT. Membership in the ERT draws on the entire corporation. The *Exxon Valdez* oil spill exceeded the capabilities of the ERT that was initially dispatched and other elements of the corporation soon became involved in the response.

#### THE FIRST-YEAR RESPONSE (24 MARCH 1989 TO 15 SEPTEMBER 1989)

Within hours of the grounding of the tanker, Exxon had established a command center at Exxon Company, USA headquarters in Houston, Texas.<sup>22</sup> Arrangements were underway that night to relocate and assemble response equipment and supplies. Exxon's response team departed Houston and arrived in Valdez at 1730 that day. Within hours, "Dozens more trained people" arrived to help set up Exxon's on-site organization.<sup>23</sup>

Frank Iarossi, president of Exxon Shipping, was sent to Valdez to assume a role as Exxon's main spokesman for the response. Exxon's spill contingency plan normally involves Exxon Shipping's president in significant spills. His involvement at Valdez thus did not signal more than routine significance despite the high profile of his corporate position. Iarossi had, in fact, been directly involved in a spill cleanup in Hawaii just three weeks before the *Exxon Valdez* grounding.<sup>24</sup>

Exxon was extremely well connected and capable of organizing for a major response, according to general manager Otto Harrison. Internally Exxon had many response experts experienced in spill response. Within days, there were arrivals from such far-flung locations as Malaysia, the United Kingdom, Norway, and Colombia, while still others came from different corporate subsidiary locations. These included personnel from Exxon's research organization, refineries, pipelines, chemical divisions, and the exploration company. Besides its own resources, Exxon had the benefit of long-term relationships with important response organizations, and knew where and with whom contractual relationships needed to be established. "We deal with most of the major

22. The *Exxon Valdez* was owned and operated by Exxon Shipping Company and was under contract to carry oil owned by Exxon Company, USA; hence, Exxon Company, USA's involvement.

23. O. Harrison, "An Overview of the Exxon Valdez Oil Spill" in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 313.

24. O. Harrison (Exxon), interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and A. van Emmerik (FOSC staff), Anchorage, 24 June 1992, no. F670, tape, FOSC Exxon Valdez Archive.



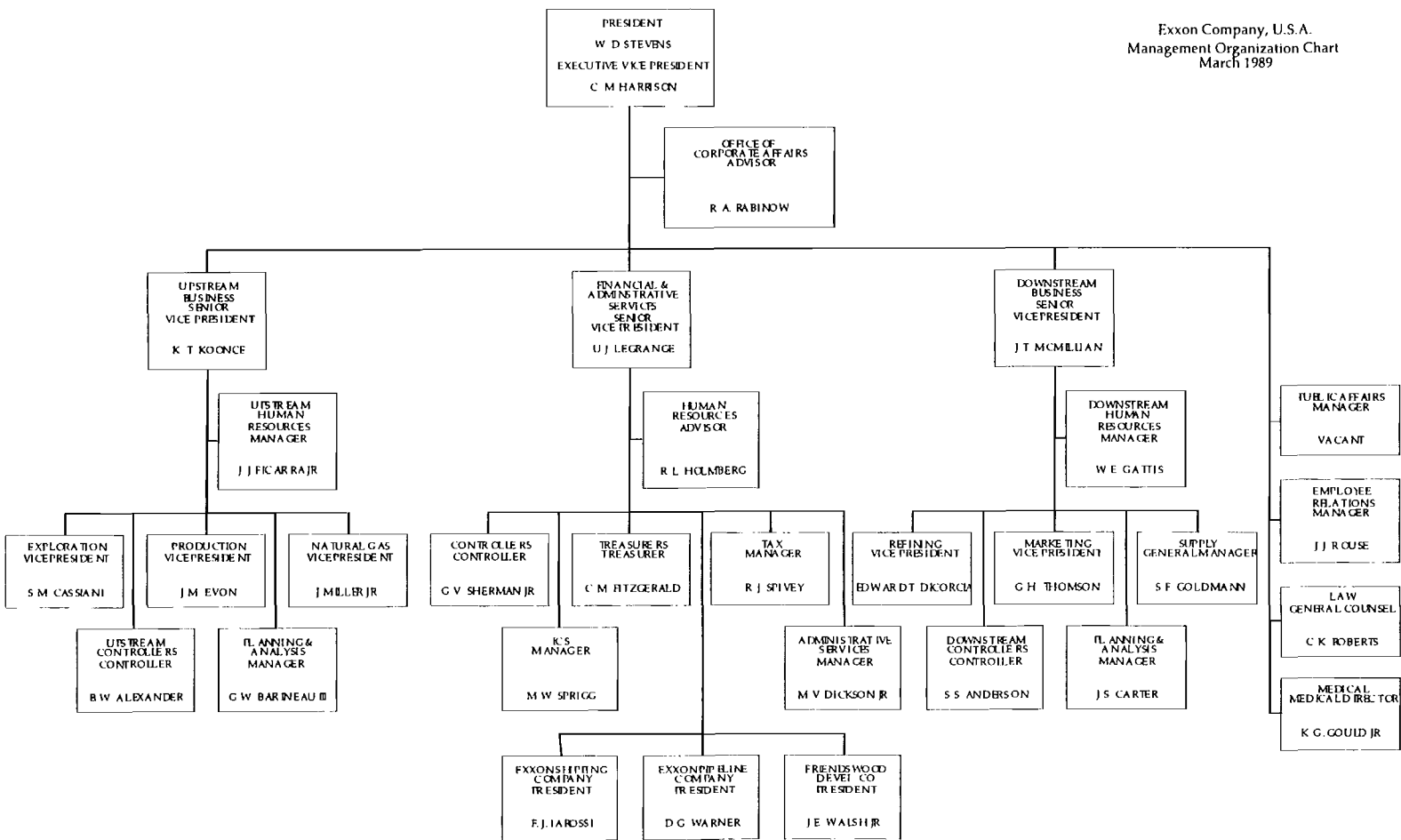


Figure 5.1. Management structure of Exxon Company, USA, in March of 1989.  
Source: Reproduced with permission from Exxon Company, USA.

contractors in the world,” observed Harrison, “So we didn’t have to go ‘outside’ to talk to contractors, we *know* contractors.”<sup>25</sup>

Within one week Exxon had sixty of its employees on hand serving as members of the response team. Another one hundred “experts” from the United States, Canada, and the United Kingdom gave a total strength of 160, as the month of April began. In addition, 350 cleanup workers had been engaged, though the actual work of shoreline crews was effectively delayed until crucial equipment arrived.<sup>26</sup> Exxon procurement personnel were successful in contracting for vital office and lodging space. This proved advantageous as office and lodging space were in very short supply in the city of Valdez.

The first two weeks of the response proved to be very intense for Exxon’s leadership. Numerous frustrations emerged as spill managers experimented with response technologies, endured devastating weather developments, sought to cope with an angry and aroused populace, and experienced heavy media pressures. In the meantime, they were faced with establishing operations for an obvious long-term stay in Alaska. Time consumed while developing strategies and procurement of needed supplies, equipment, and expertise was sometimes interpreted by critics as evidence of procrastination and limited resolve.<sup>27</sup>

Exxon dispatched cleanup personnel armed with sorbent wiping materials to Naked Island to begin manually wiping contaminated rocks. Though higher-tech equipment was on its way, the tedious rock-by-rock procedures used initially may have been inspired by the notion that doing something is better than doing nothing. One observer termed the process “an expensive combination of logistical nightmare and low-tech tedium.”<sup>28</sup> If early manual cleanup efforts were calculated to inspire public confidence that spilled oil was being removed, they did not. Instead, those activities produced an abundance of photographs and reports that seemed to inspire a sense of futility and overwhelm.<sup>29</sup> The charges that the response was too slow in developing, reports that Exxon had refused help from possibly useful resources, and abundant evidence that the spill was imperiling the environment, combined with the lack of encouraging reports from shorelines, produced a complex public relations challenge for corporate spokespersons.

Frank Iarossi took the lead role in serving as Exxon’s spokesman during the first several days. A number of corporate statements came from high-level officers (Lee Raymond, president of Exxon Corporation and Lawrence Rawl, chairman and CEO of Exxon Corporation, for example). Don Cornett, who served as Exxon’s public affairs

25. Ibid.

26. USCG Pollution Report O 020555Z April 1989 (PWS Polrep 19), sec. (1)(C).

27. B. Dietrich, “Oil Spill, One Week of Frenzy,” *The Seattle Times*, 31 Mar. 1989. This article provides an example of criticisms aimed at Exxon at the time. It reported that Alaskan State officials were leveling “blistering” comments about Exxon’s response startup. Local politicians and opinion leaders were others who were particularly vocal in making response criticisms. Arguably, however, Exxon spent the first three days trying, unsuccessfully, to cope with the spill through in situ burning and dispersants.

28. B. Dietrich, “The Cleanup Nightmare,” *The Seattle Times*, 10 Apr. 1989.

29. R. Suro, “Cleanup of Spill Turns Into a Joke That Isn’t Funny,” *Seattle Post-Intelligencer*, 14 Apr. 1989.

manager, became increasingly prominent as a corporate spokesman beginning around 3 April. Later, as Exxon firmed its organization and operations stabilized, an informational public relations approach was adopted. Exxon would not attempt to "resolve issues...through the media," according to Otto Harrison. "Our public relations people are not the ones that make statements," he reported. Instead, the approach was to refer press inquiries to those who were specialists, and instructing, "Here's a group that you need to talk to."<sup>30</sup>

Exxon appeared to be altering its leadership course during the first week in April. Officials were initially reluctant to provide details except to declare that "cleanup management was being reorganized."<sup>31</sup> Shortly afterwards, Exxon tapped Otto Harrison, general manager of production at its Australian affiliate, Esso Australia, to assume control of operations for the cleanup.<sup>32</sup> Harrison thus replaced Frank Iarossi, on 5 April, assuming a position that lasted for over three years.<sup>33</sup> Just five days later, Exxon produced the first of its formal organizational structures. In it there were eleven divisions with each reporting directly to the general manager.<sup>34</sup> Within Exxon's organization were a number of task divisions that served to establish and support its field operations (table 5.1).

These divisions formed the "behind the scene" components that permitted actual cleanup operations to take place. Field activities were, in the meantime, directed by the general manager (Harrison) who held broad powers and responsibilities.<sup>35</sup> Harrison's job description clearly specified a command, rather than a coordinative role. Such verbiage as "develops the overall plan of action," "ensures that the assigned responsibilities are carried out," and "acts as [Exxon] spokesperson with the media, public and governmental agencies," left little question about the intended format of the general manager's role.<sup>36</sup> Harrison later declared that, in addition to his broad powers, he was given "unlimited authority" to marshal and utilize Exxon resources, and to do what was necessary to accomplish a successful response.<sup>37</sup>

The majority of personnel assigned to the spill response were involved in field-based operations, particularly to work on the shorelines. Over a five month period the work force grew to the size of a small army.

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30. Harrison, interview, 24 June 1992.

31. L. Schnellinger, "The Chaos Is Growing in Increasingly Futile Effort To Conquer Spill," *Seattle Post-Intelligencer*, 7 Apr. 1989, sec. A. For a short period of at least one day (6 April), Exxon officials were "inaccessible," canceling a news conference and positioning its management group behind closed doors.

32. Harrison, interview, 24 June 1992. Harrison's full title was: "General Manager, Alaskan Operations." Mr. Harrison was called, in Australia, by Sid Reso, CEO of Exxon, International.

33. The actual date of transfer of the Exxon leadership mantle is blurred somewhat. While Mr. Harrison reported an arrival in Alaska on 5 April, Frank Iarossi was still being quoted as a corporate spokesperson during days after that date (J. Connell 7, "Bush Calls in Troops To Clean Up Spill," *Seattle Post-Intelligencer*, 8 Apr. 1989).

34. Exxon, "Organization Charts," 29 July 1989, no. C1225, FOSC Exxon Valdez Archive.

35. Harrison, interview, 24 June 1992. Mr. Harrison reported that he routinely communicated with Mel Harrison (not related), executive vice president of Exxon Company, USA, regarding developments in the spill. He "wouldn't have had any qualms" about calling Bill Stevens, President of Exxon Company, USA, Larry Rawl, or Lee Raymond "that we needed to get a decision." Harrison also observed that his assignment was "the only job I've had where I had unlimited monetary privileges."

36. Exxon, "Organization Charts."

37. Harrison, interview, 24 June 1992. That authority, Harrison reported, was provided by the chairman of Exxon Corporation, Lawrence Rawl. Harrison is a strong advocate of the powerful central leader approach as a means of dealing with crisis response. He favors a stronger role for the FOSC as a "director," rather than as a monitor of future responses.

TABLE 5.1

## Exxon's Task Divisions and Associated Responsibilities

Task Division	Function/ Responsibilities of Task Division
Legal	Responsible for anticipating any legal action that could result from the spill and/or cleanup, and providing the necessary advice to handle those matters.
Accounting	Acts as "Office Manager" on oil spill cleanup team. In addition to defined (fiscal records, management and accounting) responsibilities, carries out other tasks as required in an emergency by the operations manager.
Public Affairs	Responsible for the release of information to the news media and other audiences on aspects of the spill and its cleanup.
Employee Relations	Responsible for personnel administration matters.
Claims and Complaints	Responsible for handling and settlement of all third party and complaints resulting from marine casualty, and provides liaison contact with the ship owning affiliate/independent ship owner and insurers.
Telecommunications	Responsible for establishing, operating, and maintaining an effective communications network at the spill site.
Administration	Responsible to ensure that proper arrangements are made for feeding, housing and transporting personnel who are assigned to response duties.
Government Agency Liaison	Responsible for advising the (Exxon) On-Scene Commander on liaison with the various government agencies involved, and ensures that relevant regulations are being followed.
Procurement	Responsible for locating, purchasing, and expediting the materials and services required by the Oil Spill Response Team to clean up the spill.
Contracting	Responsible for obtaining and maintaining an adequate pool of personnel to perform the necessary tasks to clean up the spill.
Logistics Support	Responsible for assisting procurement and mobilizing equipment and supplies from the source to field deployment.
Security	Responsible for ensuring that all security matters related to spill operations are carried out and maintained.

Source: Exxon, "Organization Charts," 29 July 1989, no. C1225, FOSC Exxon Valdez Archive.

As is the case with an army in the field, the front-line workers required a substantial amount of on scene logistical support. Direct operations in the field were established using the departments and divisions illustrated in table 5.2.

TABLE 5.2

## Exxon's Departments/Divisions and Associated Responsibilities

Department/ Division	Responsibilities of Department/Division
Operations Manager	Responsible for all field operations in the cleanup of the oil spill. (Under the general supervision of, and utilizing the priorities furnished by the general manager.)
Safety Advisor	Responsible for providing expertise on the safe practices to be followed in all operations for the oil spill cleanup.
Shoreline Operations	Responsible for supervising all aspects of the shore and inland cleanup operation, including both personnel and equipment deployment.
Free Oil Operations	Responsible for effective containment, recovery, and cleanup operations at the spill site.
Containment and Recovery	Responsible for providing expertise as to the optimum methodology for the containment and recovery of oil for conditions that exist.
Exxon Valdez Salvage	Responsible for providing salvage expertise for the <i>T/V Exxon Valdez</i> .
Disposal and Storage	Responsible for providing expertise in disposing of recovered oil and oiled debris in a safe and efficient manner that is acceptable to local authority.
Operations Support	Responsible for the prompt supply of all equipment and materials required for the cleanup operation as determined by the operations manager.
Surveillance and Tracking	Responsible for providing a continuous, accurate record of the movement of spilled oil, designating areas affected, and potentially affected.
Oil Spill Chemical Advisor	Responsible for providing expertise in the use and handling of chemicals used in the combating of oil spills, such as detergents and dispersants.
Ecology	Responsible for continuously assessing damage and potential damage to the environment and reporting to the on scene coordinator.
Shoreline Cleanup Technical Advisor	Responsible for providing expertise in methods of cleaning up all types of oil from all types of shorelines.

Source: Exxon, "Organization Charts," 29 July 1989, no. C1225, FOSC Exxon Valdez Archive.

Most, but not all, major leadership positions in Exxon's 1989 response were filled by employees of Exxon and its various corporate components. A 10 May 1989 listing of personnel assigned to response team leadership positions showed that 172 of 187 (92 percent) of the positions were held by Exxon employees, and the remainder occupied by contracted personnel.<sup>38</sup> By late August, a peak of 604 was attained. A month later, as

38. Based on analysis of organizational charts (10 May 1989) furnished by the Exxon Corporation.

field operations were shut down for the winter months, that figure was reduced by half.<sup>39</sup>

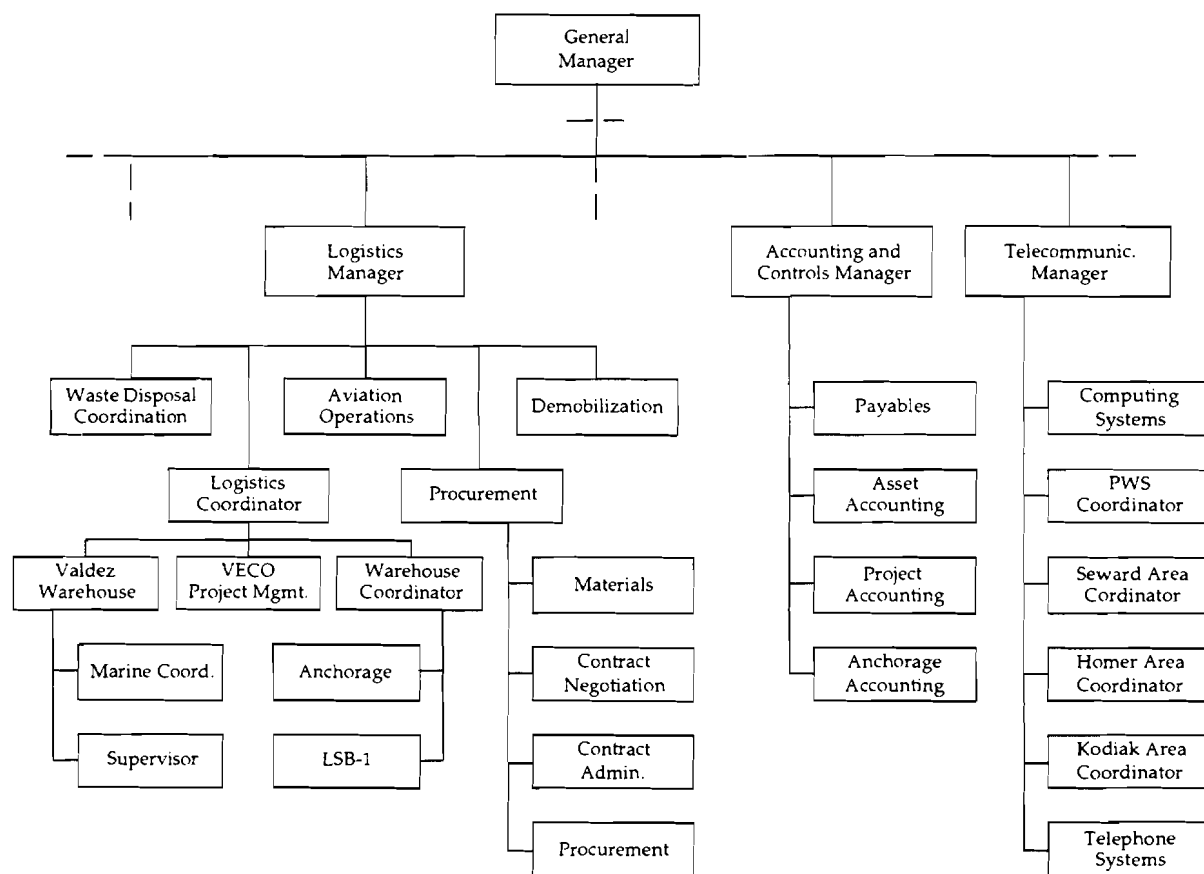


Figure 5.2. Portion of Exxon organization chart showing Exxon's marine and logistics operations organization by July 1989.

Source: Reproduced with permission from Exxon Co., USA.

Exxon modified its response organization late in July (figure 5.2). Several new departments were established after the original May document was published. A community liaison department was created, under the public affairs division, for example. When archaeological/cultural resource issues surfaced, an archaeology section was installed as a part of Exxon's technical organization. A Gulf of Alaska operations section was organized, as was a special projects department. The claims division was greatly enlarged, and specialized according to several types of liability issues. Claims functioned in diverse locations, including Seattle.<sup>40</sup> The July organization was thus expanded, reinforced, and adapted to meet the needs that surfaced as the response moved forward. The earlier (May) Exxon organizational structure featured 172 leadership positions. July's roster, in comparison, provided 352 supervisory stations, of which 302 (85.8 percent) were occupied by Exxon employees.<sup>41</sup>

39. Based on Exxon daily reports, sample analysis based on consideration of Wednesday editions of the reports (10 May 1989 through 19 September 1989).

40. Exxon, "Organizational Charts."

41. Ibid.

## CONTRACTOR SUPPORT

Exxon hired thousands of additional workers through several companies. The most prominent of these was the VECO Corporation of Anchorage. VECO engaged hundreds of shoreline workers at a basic pay rate of \$16.69 per hour, in addition to many other boat crewmen, laborers, and specialists.<sup>42</sup> The response also required Exxon's use of a number of miscellaneous contractors (table 5.3). Collectively, personnel from "other" contractors provided about one-third of the work force during most of the 1989 cleanup season.

TABLE 5.3

Selected Exxon Contractors and their Purpose/Service

Contractors	Purpose/Service Provided
Catering Contractors International	Catering for all vessels
Chemical Waste Management, Inc.	Oily waste disposal
Chugach/Nana/Marriott	Catering and housekeeping
Crawford and Company	Vessel and aircraft tracking
Crowley Marine Corporation	Vessel services
Ensco Marine Company	Vessel services
ERA Aviation, Inc.	Helicopter services
Gulf Fleet Marine Operations	Vessel services
Martech USA, Inc.	Vessel services
Otto Candies, Inc.	Vessel services
Tidex Corporation	Vessel services
VECO	General contractor
Woodward Clyde Consultants	Scientific research services

Source: Exxon, letter to Rear Adm. Ciancaglini (list of major summer contractors for planning purposes, 11 Sept. 1990), no. W1502, FOSC Exxon Valdez Archive.

In 1989 Chugach/Nana/Marriott (CNM) was responsible for "about 95%" of food catering, janitorial work, and housekeeping services provided to Exxon and its contractors. In considering the volume of that effort, a helpful perspective is gained regarding the size of the 1989 response. A CNM spokesman reported that their organization fed between twelve and fourteen thousand persons per day during the busiest periods of the summer. To accomplish this, CNM had about five hundred persons stationed at sixty to eighty field locations. At the close of 1989 operations, CNM had furnished provisions for 2,384 total locations, including vessels, villages, on-shore operations (offices and warehouses), land camps, and maintenance facilities. Of these,

42. M. Satchell and B. Carpenter, "The Disaster That Wasn't," *U.S. News and World Report* (18 Sept. 1989): 63. The article also reported that "180 boat owners were hired" with charter rates ranging up to \$5,000 per day.

76 percent were considered "Valdez issue locations," while 13 percent and 11 percent were Kodiak and Seward area activities, respectively.<sup>43</sup>

VECO compiled a report of commodities used by its work force during the 1989 response (table 5.4). The figures not only give indication of the size of VECO operations, but they also provide an indication of the economic significance of spill-related activities.

VECO practiced, to a great extent, a policy of hiring Alaskan workers, and purchasing necessary goods from Alaskan businesses. The sudden availability of high-paying jobs, contracting opportunities, and markets for Alaskan businesses helped to inject vitality into the state's economy. VECO's 1989 purchases involved transactions with firms in thirty-three states, though about 80 percent of all materials were bought from Alaskan vendors. Places that benefited most were often those communities that were heavily impacted by the effects of the spill.<sup>44</sup>

TABLE 5.4

Purchases made by VECO-1989

Item Purchased	Amount of Item Purchased
Beef	the equivalent of 900 cattle
Pork	the equivalent of 500 hogs
Poultry	the equivalent of 280,000 chickens and 800 turkeys
Milk	the amount which would be carried by 24 tanker trucks
Total foodstuffs	9.8 million pounds. (4,900 tons)
Rain suits	157,000 sets
Rubber boots	65,000 pairs
Hard hats	30,000
Coveralls	125,000 sets
Toilet paper	530 miles, if unrolled

Source: "They Used Just 530 Miles of Toilet Paper," *Alaska Journal of Commerce* (4 Sept 1989).

Figure 5.3 illustrates the buildup and cycle of the 1989 Exxon response. It is organized according to the number of "prime contractor" (VECO/Norcom) personnel, the number of Exxon employees, and the total of "other" contracted personnel. (The actual "high water" mark of total personnel present occurred on Tuesday, 25 July 1989 when 11,332 employees were present and engaged in cleanup-related or supporting activities.)<sup>45</sup>

43. C. Ross (Chugach/Nana/Marriott), conversation record by Lt. Comdr. R. Gaunt, 15 Dec. 1992, no. F762; and C. Ross (Chugach/Nana/Marriott), internal memorandum, 24 Jan. 1990, no. W1961, FOXC Exxon Valdez Archive.

44. Ibid.

45. Exxon, "1990 General Work Plan, March Planning Document," 15 Mar. 1989, appendix 1, no. W477, FOXC Exxon Valdez Archive, 3.



## FIELD ORGANIZATION

Exxon organized its field response elements into "task forces" (figure 5.4). In Prince William Sound a total of six such groups were created. Task forces consisted of four to seven hundred workers, with seventy to more than one hundred vessels.<sup>46</sup> Three of the task forces were functioning early in May, and others were added on 17 May, 18 July, and 24 July. Task forces continued to function throughout most of the summer.

On 31 August Task Force III was dismantled, thus beginning the shutdown of 1989 cleanup operations. Early in September, forces were first "consolidated" then finally terminated as work activity was halted.<sup>47</sup>

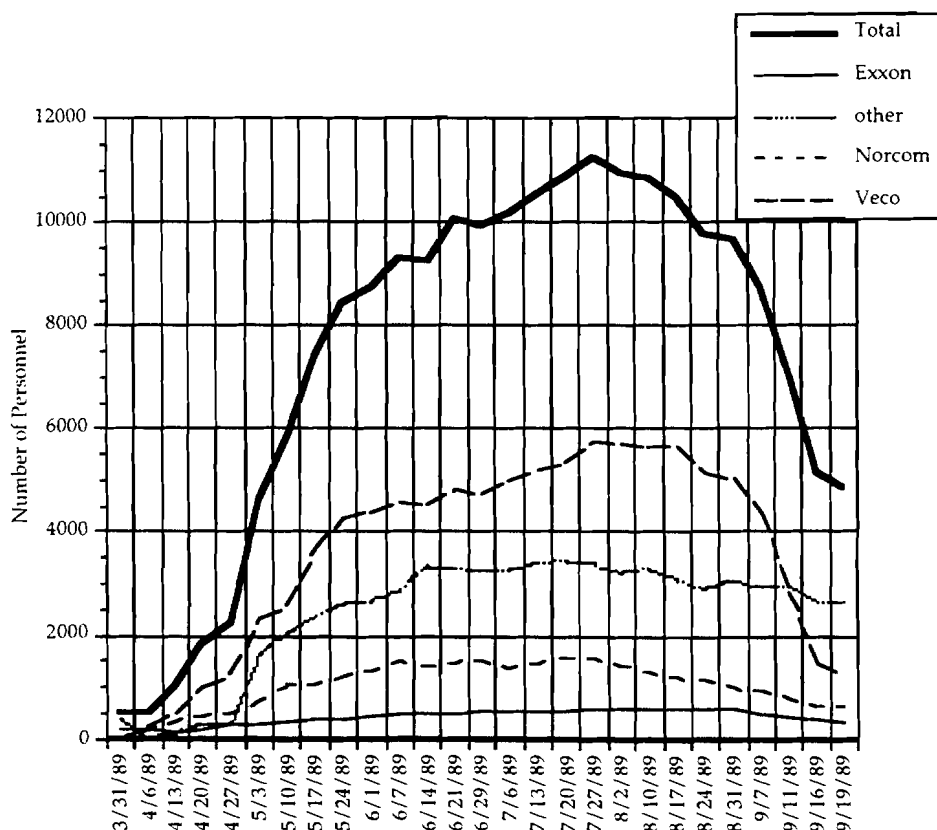


Figure 5.3. Buildup of Exxon work force in 1989.

Source: Reproduced with permission from Exxon Co., USA.

Shoreline cleanup work provided the focus of most field operations, particularly during the period between mid-May through the end of August. On particularly "good" days thirty-three to thirty-five hundred persons were at work on shorelines. Shoreline workers made up about 38 percent of the entire work force (figure 5.5).

46. A.D. Carpenter, R. Dragnich, and M. Smith, "Marine Operations and Logistics During the Exxon Valdez Spill Cleanup" in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 205.

47. Dates of task force developments are based upon data contained in Exxon daily reports from the various times indicated.

A somewhat different arrangement was followed outside Prince William Sound. (Only eighteen hundred of the response's seven thousand task force workers, or 25.7 percent, were assigned to Gulf of Alaska settings.)<sup>48</sup> In the Gulf of Alaska area, shorelines were not as heavily impacted, and the oil that reached them was often more weathered and in the form of mousse or tarballs. Task forces in western Alaska consisted of groups that were sized according to immediate needs. "Task Force Homer" numbered 232 persons late in June, then gradually diminished. At Seward, the local task force featured ninety-five people on 29 June, then, unlike at Homer, actually continued to grow, numbering as high as 145 before beginning to downsize for the shutdown of operations. The largest western Alaska group was "Task Force Kodiak" which numbered between 440 and 640 during most of the summer months.<sup>49</sup>

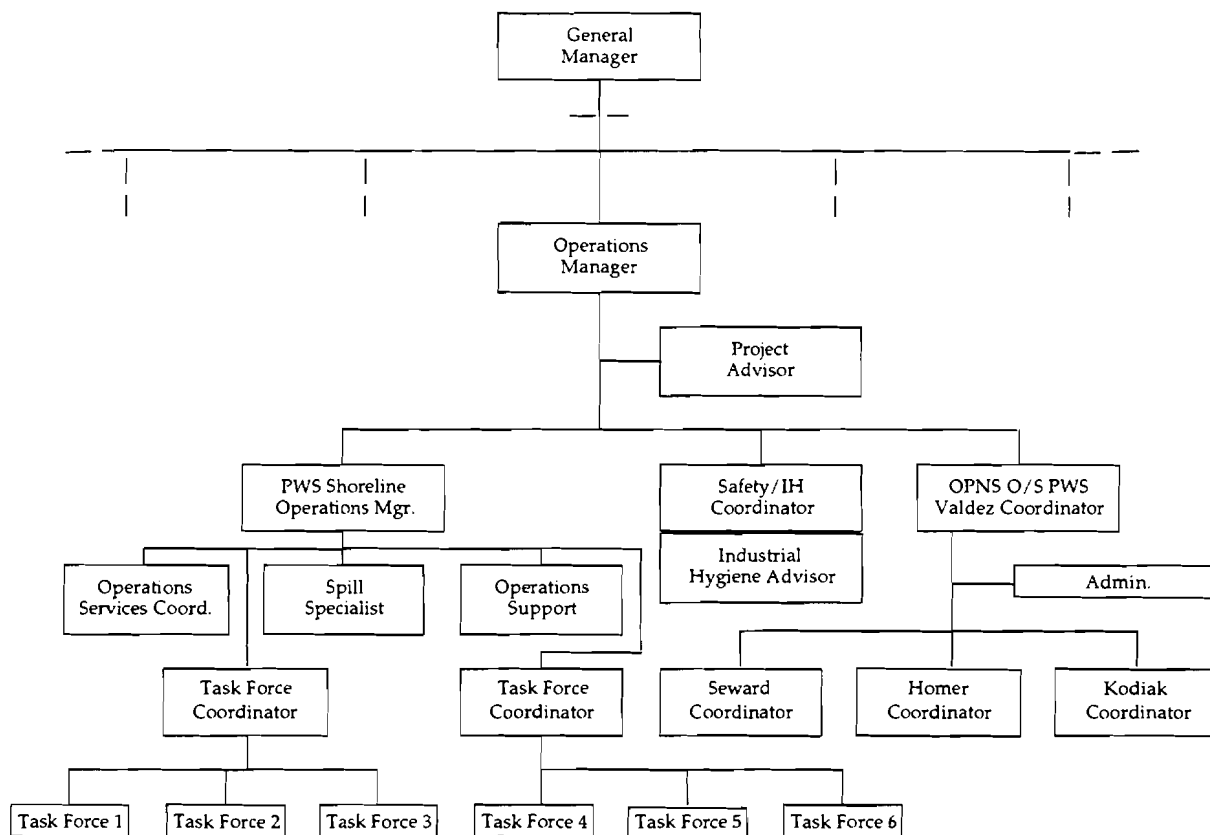


Figure 5.4. Exxon operations organization in Valdez showing task forces.

Source: Reproduced with permission from Exxon Co., USA.

The demobilization of cleanup operations moved swiftly. Otto Harrison described the process through which it was determined to end operations on 15 September. Harrison and Vice Admiral Robbins were having an informal discussion with a small group of fishermen, and casually asked the group for counsel about a date for termination of cleanup operations. The fishermen pondered the question briefly, and declared that 15 September occurred to them as being "about right." Exxon charged its research group to

48. Carpenter, Dragnich, and Smith, 205.

49. Figures and dates involved are contained in various Exxon daily reports.

program all available weather and climatological data into its computer, to continue to feed data into the program for development of short term adjustments, and to finally produce a scientifically generated shutdown date. After several weeks, the answer was produced by Exxon's research group: 15 September was the ideal date, according to the research group (figure 5.6).<sup>50</sup>

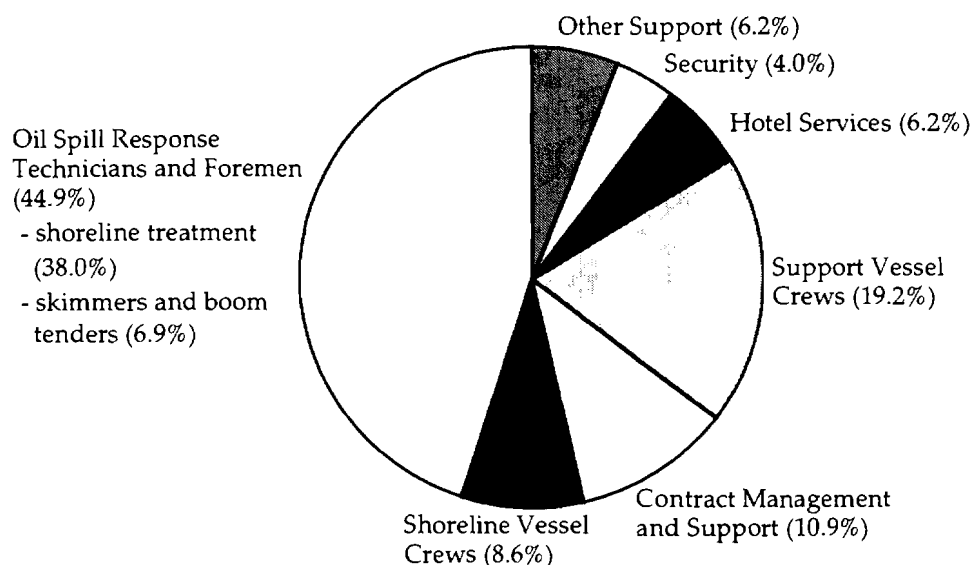


Figure 5.5. Functions of non-Exxon personnel.

Source: Reproduced with permission from Exxon Co., USA.

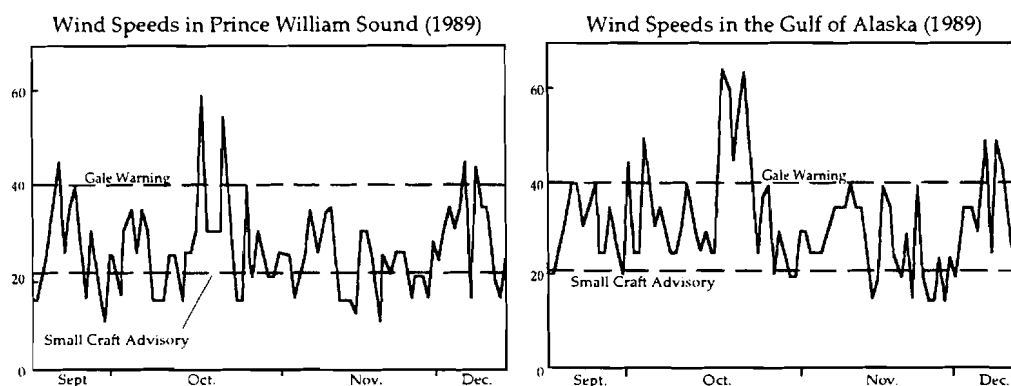


Fig. 5.6. Winter wind speeds in Prince William Sound and the Gulf of Alaska in 1989.

Source: Reproduced with permission from Exxon.

## EXXON ACTIVITIES, 1989 TO END

Exxon maintained an average strength of eight hundred persons between mid-October 1989 and mid-February 1990. About 150 were Exxon employees, 250 were VECO staff members, and 400 others were from other contract sources. Outside Alaska another 300

50. Harrison, interview, 24 June 1992. The major problems, as summer ended, were the unpredictability and dangers associated with storms and declining temperatures. Though some advocated continuing a small-scale cleanup during winter months, both Exxon and the FOSC remained strongly opposed to such measures (see chapter 6, "Shoreline Cleanup in 1989.")

persons were assigned to spill-related projects, while another 250 individuals stood by, on a call-up basis, for emergencies that never materialized.<sup>51</sup>

Exxon issued a "winter staffing" document early in December. In it, 121 Exxon employees filled 87 percent of the 139 winter operations staff positions. Otto Harrison continued as general manager, and several key leaders remained in roles which were similar, or identical to those held during the prior summer.

Exxon consolidated its presence in communities throughout the spill affected area, with one person serving as liaison to both Valdez and Cordova, and another assigned to Homer and Seward. Other liaison personnel were positioned in Kodiak and Anchorage. For the winter organization, Exxon reduced its community relations personnel from twelve to eight. Business operations occupied a large portion of Exxon's winter focus. A total of sixty-four persons were involved in processing claims. Claims activity was largely centered in Anchorage, though smaller operations were maintained at seven other locations. Corporate property accounting and processing of accounts payable also involved a number of personnel during the winter period.

Though it was certain that Exxon would not conduct cleanup operations during the winter months, emergency response capabilities were maintained. Although free-floating oil had diminished markedly since early in the summer months, some persons feared that some new crisis might emerge that would require the services of a mobile response team. Though Exxon stood prepared with both personnel and equipment, the winter response system was never tested.

One of the more significant activities for the winter period involved Exxon's scientific and technical staff. Planning for the 1990 cleanup season required significant amounts of information about what was transpiring in the spill area. To what extent would oil remain on shorelines following the winter months? Would there be newly contaminated areas? What sort of work force would be needed to accomplish the 1990 cleanup? What type of technologies would be useful in the 1990 response? These were the sorts of questions that faced Exxon planners during the months between the 1989 and 1990 cleanup seasons.<sup>52</sup>

In another important winter development Exxon announced its intention to center response activities in Anchorage, instead of returning to Valdez. The move was announced in January, and included a statement that Exxon wished to "minimize the disruption to Valdez." The new "highly mobile teams" field approach also served as a factor in Exxon's decision. With a large warehouse in Anchorage, along with a centralized transportation control center, the benefits of the new location were apparent to Exxon officials. As command operations transferred to Anchorage, about sixty Exxon employees made the move. A group of about twenty-five others remained in Valdez where they continued to plan and prepare for 1990 activities.<sup>53</sup> Exxon's decision

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51. Exxon, "1990 General Plan, March Planning Document," appendix 2, 3.

52. NOAA, the Coast Guard, and the state of Alaska also conducted winter studies. The recommendations of NOAA proved especially influential to the direction the cleanup took in 1990 (see chapter 7, "Shoreline Cleanup in 1990.")

53. T. Wilson, "Spill Cleanup Won't Be Based Here in 1990," *Valdez Vanguard*, 24 Jan. 1990.

influenced both ADEC and the FOSC towards similar actions, thus response related activity was substantially reduced at Valdez, during 1990 and subsequent years.

#### SUMMER 1990

Two types of assessment teams that were sent into the field from late April through early May to evaluate shorelines conditions were the spring shoreline assessment teams (SSAT) and anadromous stream assessment teams (ANAD SAT). These teams consisted of representatives of state and federal agencies along with Exxon personnel and the land manager.<sup>54</sup> Information gained during those surveys provided a basis for determining what needed to be accomplished in 1990, and the scope of operations that would be required for the cleanup.<sup>55</sup>

Exxon simplified its organizational approach for 1990 field operations. Small, highly mobile multifunctional teams replaced the task force approach that had been employed earlier. The 1989 approach had involved moving several hundred workers into a general area, particularly in Prince William Sound. In 1990, teams were generally composed of fifteen to forty persons, typically, an Exxon supervisor, ADEC and Coast Guard monitors, safety personnel, and VECO supervisors and laborers.<sup>56</sup> The first of the teams was sent into the field in April with most others following around the first of May.<sup>57</sup> Exxon projected a work load requiring 3,720 man-days for all mechanical/manual cleanup work for the 1990 season.<sup>58</sup> The level of bioremediation-team activity was measured in terms of what Exxon called "bio-unit days." In April, projected work requirements called for 74 bio-unit days. Exxon provided for a total of 185 days, doubtlessly anticipating the development of bioremediation tasks in areas not identified at the time of its preseason plan.

Field work was conducted from berthing/command vessel bases. In addition, operations employed about sixty other vessels, including landing craft, small boats, and supply craft. Thirty-four aircraft were used in the 1990 cleanup. Exxon deployed about 1,030 persons at the height of 1990 activities, including shoreline workers, management, and all support staff.<sup>59</sup> When shoreline activities began, 782 persons were listed in Exxon's work rosters.<sup>60</sup> Those numbers were gradually increased to over one thousand about eight weeks into spring/summer operations. Similar figures were sustained during most of the month of July, then a decline began until just over six hundred remained as the last crews completed shoreline work in mid-September.<sup>61</sup> Work crews functioned on a fourteen-days-on and seven-days-off schedule.

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54. National Oceanic and Atmospheric Administration (NOAA), "CAMEO™ Valdez, Computer-Aided Management of Emergency Operations for the Exxon Valdez Spill," 1 July 1992, no. F813, FOSC Exxon Valdez Archive, 15-16.

55. Harrison, "An Overview of the Exxon Valdez Oil Spill," 317.

56. Exxon, Executive Summary, in "Exxon 1990 Work Program," 27 Apr. 1990, no. W763, FOSC Exxon Valdez Archive.

57. *Ibid.*, fig. VI-2 "Squad Deployment Schedule."

58. *Ibid.*, fig. VI-1. Maximum employment of the six squads available in 1990 would have provided ninety-three hundred man-days. Exxon thus built into its plan a means for dealing with unanticipated work contingencies.

59. Exxon, "1991 General Operations Plan," sec. 4.

60. Since Exxon maintained an average strength of about eight hundred persons during most of the 1989-90 winter months, "new hires" for the 1990 summer season probably amounted to about 350-400 persons. Most of those were actually "re-hires" who had served in the 1989 response.

61. Based upon figures reported in Exxon daily reports, May 1990 through September 1990. (Reports were sampled on a once-a-week basis.)

Exxon placed great emphasis on safety. Safety was regularly referred to as “the number one priority.”<sup>62</sup> Safety-mindedness influenced work policies, resulted in specific precautions being made, and prompted Exxon to devote a substantial amount of attention to training employees. Training programs were mandatory, and included refresher work for persons who had served in 1989, but were returning for later duties. Exxon remains particularly proud of its successes in maintaining a high level of safety performance, and points to figures that indicate much lower than average levels of worker casualties than is the case in comparable work settings.<sup>63</sup>

During the 1990 cleanup season, 425 subdivisions were treated in Prince William Sound, and another 162 saw attention in the Gulf of Alaska (totaling 587). Cleanup squads spent the majority of their time removing heavily weathered oil and tarmats, and gathering what finally amounted to about five thousand tons of oiled refuse. Bioremediation was used at 374 subdivisions, while berm relocation and/or hot-water washing was employed on smaller numbers of segments.

In October of 1990 at the end of the cleanup season, Exxon held what a local newspaper described as being possibly “the biggest garage sale in the history of civilization.”<sup>64</sup> The auction of surplus products from Exxon’s inventory of materials from the spill response was held in Anchorage, and lasted for four days. The sale was perhaps most significant as a signal that Exxon was demobilizing its large-scale response apparatus.

#### THE 1991 CLEANUP SEASON

Anchorage again served as the base of operations for the 1991 response. A small logistics support center was operated at Seward for vessel support, but no other offices or other activity centers were operated at other response communities. Exxon’s organizational arrangement again consisted of a general manager with eight departments reporting directly to Otto Harrison, who continued as Exxon’s general manager. Certain functions were consolidated to form the remaining departments. The main departments in Exxon’s 1991 response included accounting, administrative, public information, telecommunications, community liaison, operations and logistics, technical and planning, and contracts/security/central files. For important leadership roles, Exxon again chose personnel with previous-years experience in the response.<sup>65</sup>

The 1991 response might be described as a scaled-down version of 1990’s activities. The emphasis was again upon nonintrusive technologies, and employment of small, experienced, and mobile cleanup teams. Most of the 1991 squads were self-sufficient and deployed to the field in berthing vessels. These vessels also served as command and communication centers for area operations. Workers were again provided by the VECO Corporation. Squads generally consisted of experienced Alaskans from local and area communities. The Chenega Village Corporation provided a small squad of

62. Exxon, “1990 General Plan, March Planning Document,” appendix 2, 4. This was but one of numerous references where this theme was stressed.

63. Ibid., fig. II-6.

64. R. Mauer, “Sale of Decade, Exxon Puts Spill Gear on the Auction Block,” *Anchorage Daily News*, 7 Oct. 1990.

65. Exxon, “1991 General Operations Plan,” sec. 5.

shoreline workers that toiled at selected sites in southwestern Prince William Sound. A supply vessel (M/V *Adele Candies*) based at Seward, brought provisions to base-vessels in the field.<sup>66</sup>

#### 1992—FINAL OPERATIONS IN THE FIELD

The 1992 field operations were carried out by two small multipurpose teams. Each team had a makeup that included Technical Advisory Group (TAG) representatives. That meant that shoreline circumstances could be evaluated and cleanup decisions made immediately at the segments that were ultimately visited. (Federal On Scene Coordinator routine approval authority was vested in Coast Guard team members.) Teams numbered eleven persons, and included all cognizant agency representatives. Although work groups were called "survey teams," they also performed actual cleanup and treatment work at the various sites.<sup>67</sup>

Otto Harrison returned to Anchorage to continue his general manager's responsibilities.<sup>68</sup> Exxon had long practiced the principle of permitting response-assigned personnel to leave Alaska during the winter months, often to return to Houston which is a home base for many of the Exxon supervisors who served in the response. During the entire three-plus years of the response there was always a cadre of Exxon leadership personnel at Anchorage, with personnel rotating to permit "outside" leave. Exxon viewed the respite from long Alaskan winters as therapeutic for its personnel.<sup>69</sup>

In 1992 Exxon planned to have four persons in Anchorage, including Mr. Harrison. VECO provided a few laborers, and once again Seward functioned as the base of vessel operations. ERA flight services, another familiar standby, provided a charter helicopter. There was a very limited amount of local hiring done in 1992.<sup>70</sup>

When work was complete in the response area, Exxon gradually reduced its staff. A few additional tasks remained. A report describing work accomplished in 1992 was produced and published two months after the cleanup was completed.

#### SUMMARY

Exxon assumed the role of primary responsible party for the *Exxon Valdez* response within hours after the spill. It too initially fell victim to the many difficulties that hampered early response efforts, however, including lack of response equipment and difficulties in coordinating the response that could be mounted with the resources then

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66. Ibid.

67. Exxon, "1992 Work Program Completion Report," 1 Aug. 1992, no. F692, FOSC Exxon Valdez Archive, 3-4.

68. Mr. Harrison pointed out, however, that he had not "gone back" to other assignments during the previous winter. Instead, he was in heavy demand as a resource, and spoke to seventy different groups, including several foreign governments, in thirteen different countries (Harrison, interview, 24 June 1992).

69. Exxon provided breaks in service for key personnel as early as April, 1989 (A. Teal, interview by Dr. T. Leschine [FOSC staff], 22 July 1991). The strategy was often compared with Coast Guard policies which kept personnel in specific assignments for more extended periods of time, thus lessening turnover problems, but at the possible expense of exhausting the persons involved.

70. Ibid.; and Lt. Comdr. R. Gaunt, "Juneau Spring-Summer 92 Planning Meeting" (historian's report, 22 Jan 1992), no. F316, FOSC Exxon Valdez Archive. Otto Harrison revealed Exxon staffing plans at the session.

on hand. Initial hopes that the spill could be dealt with by means of dispersants and in situ burning in lieu of the mechanical containment and removal options which were not available were defeated by technical difficulties, lack of necessary supplies and equipment, slow approvals, and ultimately, the weather. An early attempt to demonstrate that "something was being done" on oiled shorelines through deployment of "rock wiping" crews backfired when it was widely interpreted in the news media as proof of ineptitude and the futility of the cleanup.

Under Operations Manager Otto Harrison, Exxon eventually built an effective response organization of a size and organizational depth that has never been seen in previous oil spill cleanups. The company's experience with oil exploration and production in remote areas appears to have provided the foundation it relied upon for logistics and for internal technical support for engineering, purchasing, cost accounting, permitting and research. In addition, the interdependent nature of the oil industry meant that it was well connected to other organizations who could supply whatever materiel or expertise it lacked.

Exxon proved adept at utilizing its own vast corporate resources, and at gearing up quickly to mount what became a very large-scale response. Its adeptness in personnel management, procurement and operations management came to be greatly admired by the Coast Guard and other organizations. The basic organizational model established by Mr. Harrison on 10 April 1989, which emphasized central control but which also made use of field offices to parallel the Coast Guard organization, was used by Exxon throughout the response.





## CHAPTER 6. SHORELINE CLEANUP IN 1989

### OVERVIEW OF SHORELINE OILING FOLLOWING THE EXXON VALDEZ SPILL

In the aftermath of the intense storm that occurred on the fourth day after the *Exxon Valdez* grounding, oil began to wash up in substantial quantities on Smith Island, some twenty miles from the grounding site, and in lesser quantities on other islands in Prince William Sound.<sup>1</sup> By 28 March, there was heavy oil impact on both Smith and Little Smith islands, and oil had reached all the islands of the Naked Island group.<sup>2</sup> Shoreline surveys were being conducted by National Oceanic and Atmospheric Administration (NOAA) personnel throughout these islands, revealing highly variable oiling conditions. Oil was found to have penetrated ten to twenty centimeters into some gravel beaches, and pools of mousse were up to ten centimeters deep.<sup>3</sup>

Cleanup operations had commenced on Knight Island by 29 March, and on 2 April, they were extended to Naked, Peak, and Smith islands.<sup>4</sup> Exxon overflights were now indicating the presence of large concentrations of oil in Knight Island Passage, in a position to enter the Gulf of Alaska. Exxon, with 160 persons now on scene, contracted with 350 additional cleanup workers.<sup>5</sup>

By the evening of 2 April, light sheens, reported moving into the Gulf of Alaska in the morning hours, were found now to consist of several well-defined streams of oil, moving through the gulf some four to five miles off shore.<sup>6</sup> Preparations to protect sensitive shorelines in the gulf were gotten underway by 3 April, but by 6 April, with the leading edge of the slick now reported to be twenty-two miles south of Nuka Bay, oil impacts were being reported on the Chiswell Islands and at Barwell Island at the entrance to Resurrection Bay.<sup>7</sup>

The *Exxon Valdez* spill was to result ultimately in very extensive shoreline fouling, not only within Prince William Sound but in areas nearly halfway down the Alaska Peninsula, some seven hundred miles from Bligh Reef (figure 6.1).

At the high point of shoreline cleanup operations, Exxon would have more than three thousand workers dedicated directly to the task; the shoreline cleanup effort would become the largest ever undertaken.<sup>8</sup> Shoreline cleanup assessment team (SCAT) field surveys had, by September 1989 identified 790 miles of shoreline within Prince William

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1. USCG Pollution Report O 280230Z March 1989 (PWS Polrep 8), sec. (1)(A).

2. *Ibid.*

3. NOAA Hotline 17, report 19, 29 Mar. 1989.

4. USCG Pollution Report O 020555Z April 1989 (PWS Polrep 19), sec. (1)(B); and USCG Pollution Report O 290920Z March 1989 (PWS Polrep 11), sec. (3)(B).

5. *Ibid.*, sec. (1)(C).

6. USCG Pollution Report O 022300Z April 1989 (PWS Polrep 20), sections (1)(C) and (1)(E).

7. USCG Pollution Report O 062325Z April 1989 (PWS Polrep 28), sec. (1)(B).

8. J. Michel, R. Pavia, and S. Christopherson, "Shoreline Cleanup Decision-Making for the Exxon Valdez Oil Spill" (draft of unpublished report, 1991).

Sound which had been oiled, over 200 miles of which were classified as heavily oiled (table 6.1).<sup>9</sup> In western Alaska, in the Kenai Peninsula–Kodiak region, more than 2,400 miles of shoreline were found to be oiled.<sup>10</sup>

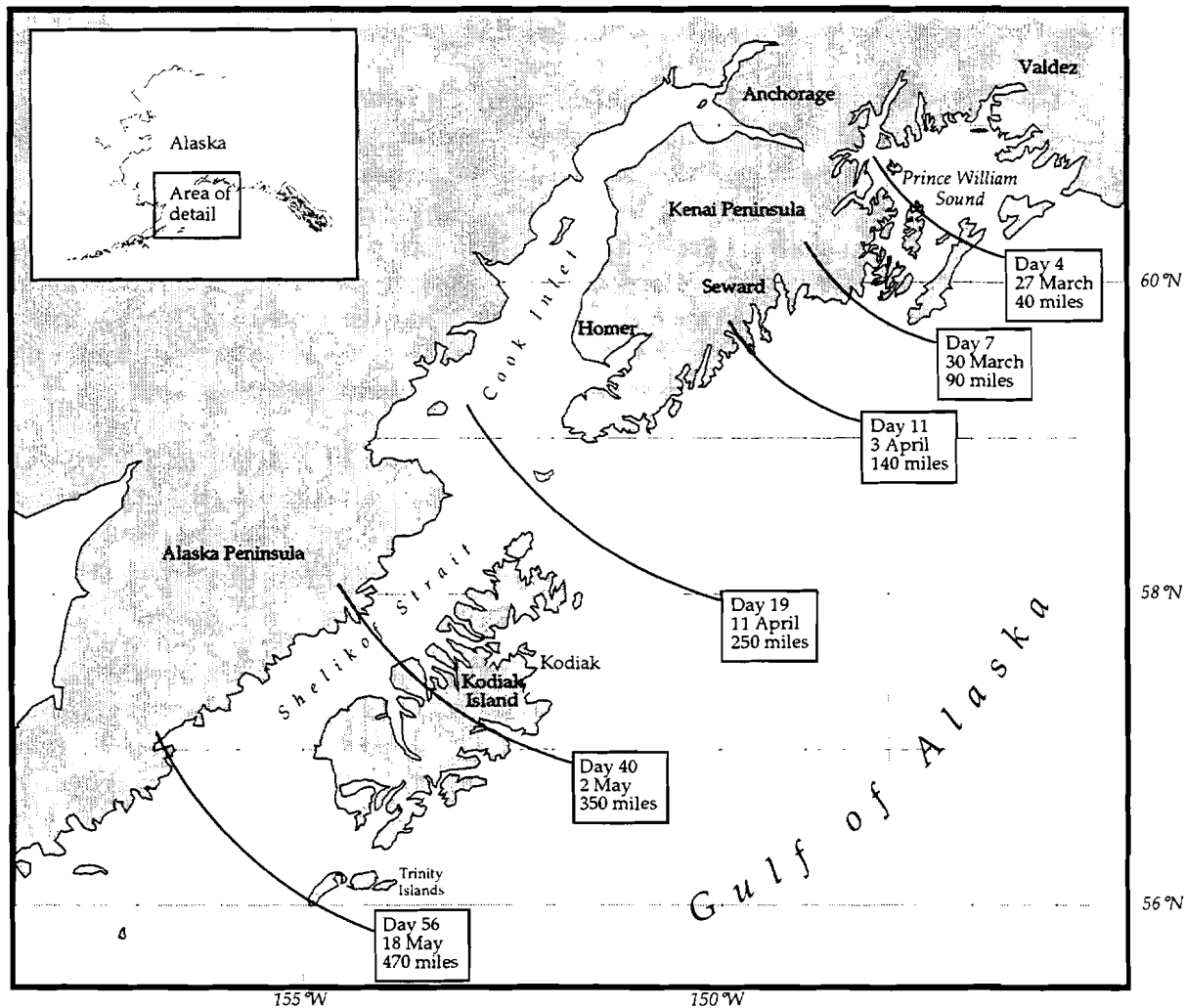


Figure 6.1. Progression of oil through Prince William Sound and the Gulf of Alaska for the first 56 days after the grounding of the *Exxon Valdez*.

#### INITIAL ORGANIZATIONAL RESPONSE TO SHORELINE OILING

On 27 March, the Alaska Regional Response Team (RRT) held a teleconference in which it developed plans to deploy sorbent materials on beaches in the path of the spill. It also advised Exxon that shoreline cleanup crews would be needed.<sup>11</sup> The first major

9. USCG, "Final Cameo Report," 26 Sept. 1989, no. C2127, FOSC Exxon Valdez Archive.

10. Ibid. About 70 percent of the oiling in western Alaska was reported to be "very light," defined as less than 10 percent of the shoreline width being covered with oil. Estimates of the actual extent of shoreline affected by the spill made by the principal organizations involved with cleanup varied widely over the course of the cleanup. Part of this difference stemmed from different interpretations of what was meant by the term "affected." Exxon estimated that only thirteen hundred miles of shoreline were contaminated by the spill (E. H. Owens, "Shoreline Conditions Following the Exxon Valdez Spill as of Fall 1990," 1991, no. F786, FOSC Exxon Valdez Archive, 49).

11. S. Skinner (DOT) and W. K. Reilly (EPA), "The Exxon Valdez Oil Spill: A Report to the President" (prepared by the National Response Team, May 1989), appendix A, no. C1388, FOSC Exxon Valdez Archive, 5.

meeting to identify priorities for shoreline cleanup operations took place two days later.<sup>12</sup> It was chaired by NOAA Scientific Support Coordinator (SSC) John Whitney. Those in attendance represented the Alaska Department of Fish and Game (ADF&G), Alaska Department of Natural Resources (ADNR), U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), U.S. Forest Service (FS), and the Chugach Alaska Corporation, a Native corporation with large holdings in the impacted area.

TABLE 6.1

Shoreline Miles Oiled vs. Shoreline Miles Treated in 1989, by Degree of Oiling (in miles)

Amount of Oiling	SCAT Survey Total	Treated	NTR Sign Off
<b>Prince William Sound:</b>			
Heavy	209.5	195.8	13.6
Moderate	163.4	155.8	7.6
Light	270.2	233.4	36.8
Very Light	146.5	78.9	67.6
<b>Total</b>	<b>789.6</b>	<b>663.9</b>	<b>125.6</b>
<b>Western Alaska:</b>			
Heavy	65.8	63.8	2.0
Moderate	128.6	101.1	27.4
Light	359.2	246.3	112.8
Very Light	1901.9	1587.2	314.7
<b>Total</b>	<b>2455.5</b>	<b>1998.4</b>	<b>456.9</b>

Source: USCG, "Final Cameo Report."

The focus of the meeting was on developing a basis for determining shoreline cleanup priorities. At the meeting, agency representatives described what they felt were the most sensitive of the resources under their respective jurisdictions. Anadromous fish streams, hatchery smolt release areas, high subsistence use areas, bird rookeries, marine mammal haulout and pupping areas, herring spawning areas, marine parks, and tourism and historical-cultural areas were among the resource types identified.<sup>13</sup> A follow-up meeting of the ad hoc "beach cleanup team" was scheduled for 31 March. At the 30 March evening meeting of the Operations Coordinating Committee, an extensive discussion of the "how clean is clean" question, which would become more and more prominent as the shoreline cleanup progressed, developed.<sup>14</sup>

On 30 March, three work groups were established to develop a shoreline cleanup strategy.<sup>15</sup> One team was to rank affected areas for cleanup priority, a second to identify

12. NOAA Hotline 17, report 20, 30 Mar. 1989.

13. Ibid. Naked, Peak, Storey, Smith, Little Smith, Knight, Green, Eleanor, and Ingot islands were identified as containing heavily oiled areas at this point.

14. NOAA Hotline 17, report 23, 1 Apr. 1989.

15. Skinner and Reilly, appendix A, 6.

appropriate cleanup techniques, and the third to make final assessments of the cleanups done. At the "Beach Cleanup Methodology Meeting" held on 31 March, Exxon's Andy Teal reported that the company's preparations for shoreline cleanup involved formal arrangements to deal with three areas: logistics, cleanup, and waste disposal.<sup>16</sup> The immediate emphasis over the next few days was to be placed on resource protection, however, after which the general flow of Exxon's work would shift to a major effort at shoreline cleanup.<sup>17</sup>

The basic approach of the shoreline cleanup effort began to take shape at a meeting of the same ad hoc work groups held on 2 April.<sup>18</sup> At the meeting, it was decided that tests would be conducted of promising cleanup methods, including the use of "steam/pressure washing." Environmental sensitivities, displayed on 15-minute topographic maps prepared by NOAA, would guide priorities, and efforts would be made to protect against impacts by cleanup crews, particularly where "the presence and actions of cleanup crews may have more detrimental effects than the presence of oil."<sup>19</sup> Northern Prince William Sound shoreline areas with heavy concentrations of oil with the potential to refloat were among the areas to be targeted for priority cleanup. Sea lion haulouts, anadromous fish streams, migratory shorebird stopover areas, and areas used by Native residents of the village of Chenega Bay were likewise assigned high priority either for protection from oil still afloat or for cleanup (table 6.2).<sup>20</sup>

By 4 April, while oil was continuing to come ashore in Prince William Sound in very heavy concentrations, Exxon was being urged to prepare for oil to strand along the southern Kenai Peninsula.<sup>21</sup> The National Oceanic and Atmospheric Administration was in the process of refining its map identification of shoreline cleanup priorities on the basis of inputs from a variety of natural resource agencies.<sup>22</sup> The earlier committee work to develop procedures for assessing cleanup priorities was accepted by the responding agencies and Exxon, and it was agreed that priorities would be reviewed on a daily basis and operations planned accordingly.

On 6 April, the "Shoreline Assessment/Cleanup Assessment Team" observed tests of several shoreline cleanup methods conducted by Exxon on Eleanor Island.<sup>23</sup> Included in the tests were low- and high-pressure flushing, cold- and hot-water flushing, and mechanical/manual techniques. The organization of the responding agencies continued to reflect the three-fold division of labor developed earlier. The "Shoreline Cleanup Committee" now consisted of a "Shoreline Priority Committee," a "Clean-Up Assessment Team" (responsible for operational decisions), and a group which concentrated on developing cleanup criteria.

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16. NOAA Hotline 17, report 22, 31 Mar. 1989. Teal, who would become Exxon's principal in the day-to-day direction of the shoreline cleanup, was a member of Esso's (Imperial Oil of Canada) National Emergency Team (NET). The NET was drafted by Exxon in the earliest hours following the spill.

17. Ibid.

18. National Response Team, "Draft Report of Beach Clean-Up Priority Meeting-4/2/89," 2 Apr. 1989, no. C775, FOSC Exxon Valdez Archive.

19. Ibid.

20. Ibid.

21. NOAA Hotline 17, report 27, 4 Apr. 1989.

22. NOAA Hotline 17, report 28, 4 Apr. 1989.

23. NOAA Hotline 17, report 30, 7 Apr. 1989.

Planning was underway to deploy work crews in the Naked Island group within a few days.<sup>24</sup> These would be the first to operate under the protocols then being developed.

At the next day's multi-agency resource assessment meeting, an Alaska Department of Environmental Conservation's (ADEC) representative expressed a preference for a combination of low- and high-pressure flushing. Exxon, however, which was then in the process of preparing its first formal shoreline cleanup plan, felt that natural weathering, high-pressure hot-water (110°F), and low-pressure high-volume cold-water washing should be the primary options.<sup>25</sup> Its plan was to focus its initial effort on the Naked Island group, and to target a "phase two" effort at critical marine mammal pupping areas, including Seal Rock, Applegate Rock, and the north shore of Green Island (figure 6.2). On the same day, the Shoreline Priority Committee reached agreement on the highest priorities and highest resource sensitivities to guide the cleanup.<sup>26</sup>

Exxon distributed its first formal cleanup planning document to the Shoreline Cleanup Committee on 8 April. The resource agencies were asked to approve the document in principle, as "an experiment to find out what is appropriate."<sup>27</sup> A three-day test involving cold-water flushing, and high-pressure warm-water washing of shorelines on Naked, Storey, Peak, and Bass islands was proposed.<sup>28</sup> The focus was on tests of techniques for cleaning biologically sensitive areas and tests with the low-pressure flushing system, aimed at identifying ways to avoid adverse impacts on shoreline stability. The committee approved the plan and approximately three hundred persons moved into the field to begin operations.<sup>29</sup>

Meanwhile, the Coast Guard commandant, Admiral Paul Yost, had been dispatched to Valdez by President Bush, arriving on 12 April. He arrived as the leading edge of the slick was approaching Kodiak, and as the shoreline cleanup effort, begun just days earlier, was concentrated around Naked Island. The commandant made it clear that the administration expected an aggressive and high-visibility shoreline cleanup effort.<sup>30</sup> Admiral Yost told a planning committee meeting that the president expected the cleanup to be accelerated, and NOAA representatives said they were ready to recommend the use of "high pressure and heat" on shorelines.<sup>31</sup>

In a teleconference with President Bush the next day, Yost reported that "hot water and steam" were necessary to clean most shorelines, and that he would press Exxon to prepare for that approach. The trade-off was presented as one in which shorelines could recover in one to two years with such treatment, as opposed to five to six years

24. "Shoreline Clean-Up Update," 6 Apr. 1989, no. C2097, FOSC Exxon Valdez Archive.

25. NOAA Hotline 17, report 31, 8 Apr. 1989.

26. A. Teal (Exxon), memorandum to Shoreline Cleanup Committee, 8 Apr. 1989, no. C3, FOSC Exxon Valdez Archive.

27. Ibid.

28. Ibid. These islands were selected because of their low potential for re-oiling, and for the presence of highly sensitive herring spawning grounds and pinniped haulout and pupping areas. Cleanup of the latter areas had to be completed by 21 May if pupping was to be unaffected.

29. NOAA Hotline 17, report 33, 10 Apr. 1989.

30. USCG, "Commandant's Arrival/Closed Conference," 12 Apr. 1989, no. C972, FOSC Exxon Valdez Archive. Notes from Yost's briefing indicate that Secretary Skinner felt that the response efforts needed "splash," and that White House advisor Richard Breedon was urging the use of federal troops in the shoreline cleanup.

31. Ibid. These comments are recorded from a 13 April meeting attended by Yost.

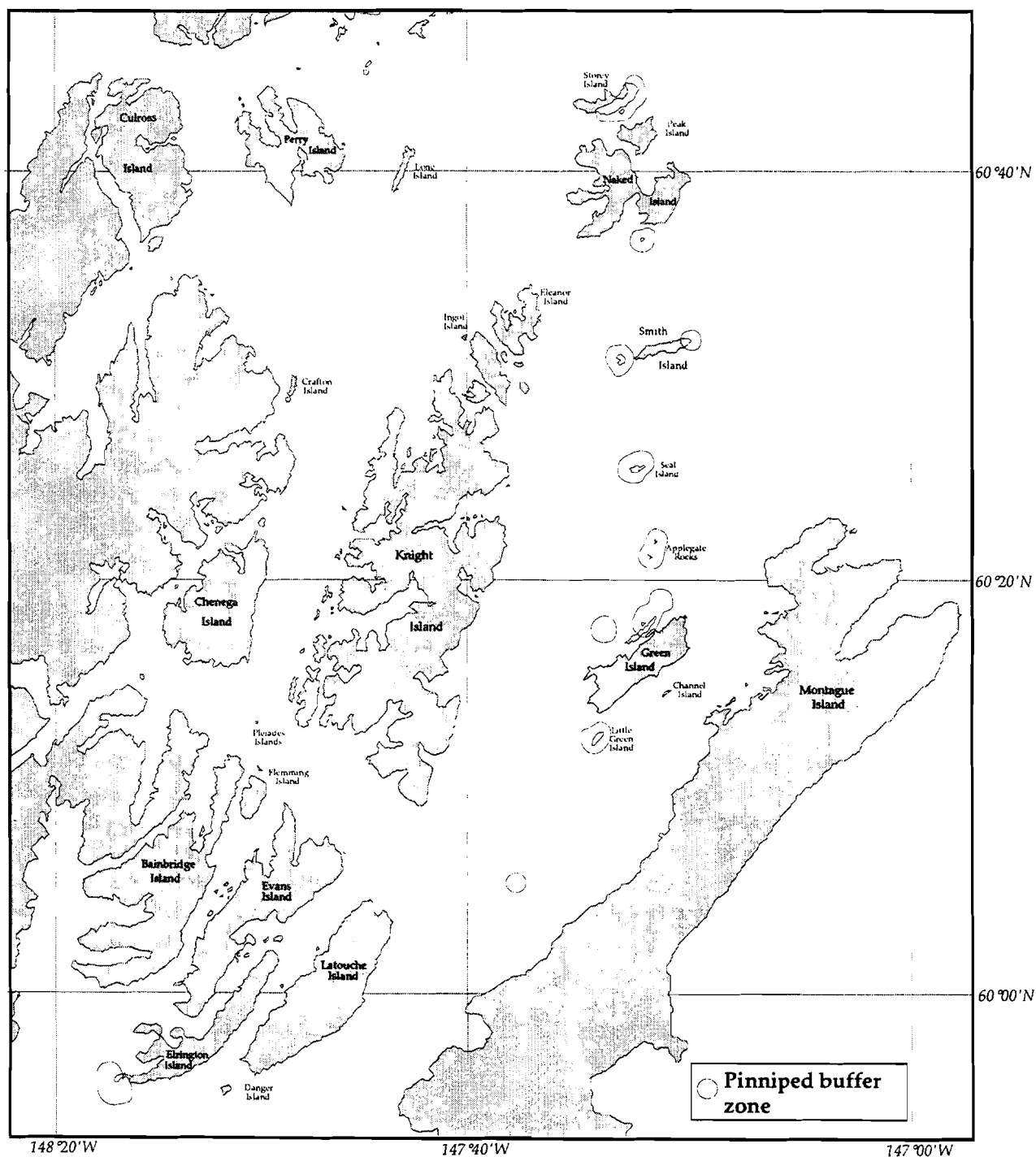


Figure 6.2. Detailed map of Prince William Sound showing locations of pinniped haulouts.  
 Source: Reproduced from Exxon map of ecological constraints from 1992.

without it. The president was reported to have understood that no “miracle” would be forthcoming. This message was conveyed in news briefings, including an interview with NBC News’ Tom Brokaw held the same day.<sup>32</sup>

In the meantime Exxon reported that it had “about 190 people employed on shoreline cleanup” in the Naked Island group. Cold-water flushing with boom containment and skimmer recovery was the primary method in use. It expected to employ 500 more “Alaskan locals” for shoreline operations, and to have berthing vessels with spaces for 510 workers in place, before the end of the month. Exxon’s major manpower contractor, VECO, had opened worker recruiting offices in Whittier, Seward, Cordova, English Bay, and Valdez.<sup>33</sup>

#### EXXON’S APRIL CLEANUP PLAN

On 15 April, Exxon released its first comprehensive shoreline cleanup plan.<sup>34</sup> In the plan Exxon projected that it would clean 305 miles of Prince William Sound shorelines by 15 September. Eighteen percent of these were estimated to be heavily oiled, 28 percent moderately oiled, and the remainder in a lightly contaminated condition.<sup>35</sup> The plan projected a need for 11 barge units, 28 landing craft vessel (LCV) units, 150 utility vessels, and 2,500 workers directly engaged in shoreline cleanup.<sup>36</sup>

The strategy had now settled down to one that would rely on cold-water flush/float washing (with multiple passes as necessary), use warm water only on rock faces that could not be treated with the flush float technique, and operate within “environmental windows” established by the resource agencies. It was assumed that no additional oiling or re-oiling would occur on treated shorelines.<sup>37</sup>

Vice Admiral Robbins, who had relieved Rear Admiral Nelson as Federal On Scene Coordinator (FOSC) on 15 April, approved Exxon’s plan.<sup>38</sup> But he expressed “serious reservations” about Exxon’s ability to mobilize as quickly as described, and requested an additional plan to address impacts on the Kenai Peninsula, in Cook Inlet, and on the Kodiak archipelago. He also required incorporation of a waste management strategy,

32. Ibid. In other briefings held on 14 April, in which Exxon’s Otto Harrison took part, the commandant now said that he was “not married” to steam cleaning the shorelines. Exxon’s 15 April “Shoreline Clean-Up Execution Plan” included several hot water-cold water washing options, and Vice Admiral Robbins, also present, noted that cold water should be used in high (biological) impact areas.

33. Exxon Press Office (Valdez), “Operations Update” (press release, 14 Apr. 1989), no. C702, FOSSC Exxon Valdez Archive. To offset lost earnings suffered by fishermen and others adversely affected by the spill, Exxon gave hiring preference to Alaskan residents whenever possible.

34. Exxon, “Shoreline Clean-Up Execution Plan,” 15 Apr. 1989, no. C990, FOSSC Exxon Valdez Archive. Both Rear Admiral Nelson, then FOSSC, and Commandant Yost had informed Exxon that such a plan was necessary (Rear Adm. E. Nelson, letter to O. Harrison [Exxon], 14 Apr. 1989, no. C6, FOSSC Exxon Valdez Archive).

35. Ibid. Western Alaskan shorelines were considered in a later supplement to the 15 April document.

36. Ibid. These figures fell well short of the 26 barge units, 61 smaller landing craft, and work force of nearly 11,000 that were ultimately required in 1989. Compare, Exxon, “Valdez Oil Spill Technology 1989 Operations,” 1 June 1990, 61, no. W1950, FOSSC Exxon Valdez Archive.

37. Ibid.

38. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 17 Apr. 1989, no. C625, FOSSC Exxon Valdez Archive.



TABLE 6.2

## Guidelines for the Assessment of Critical Resources

Critical Resources	Assessment Guideline
Anadromous Fish Streams	Critical anadromous fish streams are defined as those that produce at least 60% of the fishery for a district. Both the stream and adjacent estuarine areas where the outmigrating pink salmon fry concentrate in shallow water should be identified. In this case, cleanup should not be conducted until the fry have outmigrated and should be completed by the time the fish return.
Herring Spawning	Priority areas should be the most productive, based on the last few years' surveys. Herring spawning began in late March. Herring spawn primarily on the nearshore kelp and eelgrass.
Hatcheries	The location of fish hatcheries.
Pink Salmon Fry Remote Release Areas	Release areas for salmon fry that are away from fish hatcheries.
Commercial Fishing Areas	The following commercial fishing areas may be identified as high priority: 1) concentrated purse seine/gill net areas where fishermen deploy nets close to shore, and 2) purse seine hook-offs, which include both individual points and areas of numerous points.
Marine Mammal Haulout and Pupping Areas	Large colonies of sea lions and harbor seals. These areas usually coincide with major pupping areas, with pupping occurring from May to June. Cleaning of these areas should be completed prior to pupping. There should be no cleanup activities in these areas during the pupping season.
Waterfowl Concentration Areas	Major waterfowl staging area should be identified. Major shorebird areas of concentrated use should be identified; as areas are identified, they will be high priority for cleanup.
State Marine Parks	
Recreational Areas/Forest Service Cabins	High-use recreational tent sites and anchorages. USDA National Forest Service cabins are also included. Their value as a social resource necessitates their inclusion.
Privately Developed Lands/Facilities	These areas include private residences, both seasonal and year-round and resource production including timber and tourism.
Research Natural Areas	The USDA National Forest Service is developing a designated Research Natural Area. Other areas may be designated in the future, particularly to monitor for recovery without cleanup.
High Subsistence Value Areas	Areas heavily used by Native villages for subsistence fishing and hunting. There may be mink and otter trapping trails along the shoreline in these areas as well.
Seabird Nesting Colonies	Major seabird nesting colonies may be designated as high priority for protection.

Source: USCG, "FOSC Organization and Responsibility for Shoreline Cleanup of the Exxon Valdez Oil Spill," no. C644, FOSC Exxon Valdez Archive.

and goals and milestones which would permit measurement of progress against a time line.<sup>39</sup>

Exxon responded with a series of plan amendments. General cleanup guidelines released the next week emphasized priority removal of the heaviest oil concentrations and the avoidance of streams and their banks.<sup>40</sup> High pressure or high temperature water was not to be applied on algae beds, and marshes and other vegetated shorelines were not to be cleaned at all. Archaeological sites should not be disturbed, and mid- and upper-intertidal areas should not be cleaned while the tide was low.<sup>41</sup> Environmental guidelines developed earlier by the Alaska Department of Fish and Game (ADF&G), specifying for example that all personnel and equipment stay fifty yards from seabird nesting colonies unless authorized by the Cleanup Priority Assessment Team, were passed on to cleanup crews.<sup>42</sup>

Other environmental guidelines spoke to the necessity of speeding the cleanup in some areas so that cleanup work would not impinge upon important timing "windows" in natural breeding cycles. These included marine mammal haulout and pupping areas, where pupping generally occurred from late May to June. The target was to complete cleanup of such sites by mid-May.<sup>43</sup> By the last week in April, the cleanup which had been taking place on Naked Island was shifted to Smith Island so that pinniped haulouts there could be cleaned.<sup>44</sup> Cleanup crews were also deployed at Applegate Rock for the same reason.<sup>45</sup> Likewise, the hold still in effect on the cleanup of anadromous streams, intended to permit the out migration of salmon fry, once lifted, would have to be reimposed by 1 July when adult salmon normally return to spawn (figure 6.3).<sup>46</sup>

#### FOSC REORGANIZATION OF THE SHORELINE CLEANUP EFFORT IN LATE APRIL

On 20 April Vice Admiral Robbins announced a major reorganization of the oil spill response, designed to reflect the increasing emphasis that was going to have to be put on shoreline cleanup.<sup>47</sup> The Coast Guard's monitoring oversight would be reorganized into four sectors, three of which would cover areas outside Prince William Sound

39. *Ibid.* These comments were generally consistent with reviews of the plan provided by the Shoreline Committee and ADEC (Shoreline Committee, memorandum to FOSC, 16 Apr. 1989, no. C625; and D. Kelso [ADEC], letter to Adm. P. Yost, 17 Apr. 1989, no. C453, FOSC Exxon Valdez Archive).

40. Exxon, "Shoreline Clean-Up Execution Plan," 15 Apr. 1989. The Shoreline Committee had recommended that designated anadromous streams not be cleaned until 1 May, so that outmigrating pink salmon fry would not be interfered with (RRT, "Shoreline Cleanup Priority Assessment Guidelines," 7 Apr. 1989, no. C2080, FOSC Exxon Valdez Archive).

41. *Ibid.*

42. M. Kuwada (ADF&G), letter to A. Teal (Exxon), 6 Apr. 1987 [sic], no. C990, FOSC Exxon Valdez Archive.

43. RRT, "Shoreline Cleanup Priority Assessment Guidelines," 7 Apr. 1989.

44. NOAA Hotline 17, report 46, 22 Apr. 1989.

45. NOAA Hotline 17, report 47, 23 Apr. 1989.

46. RRT, "Shoreline Cleanup Priority Assessment Guidelines," 7 Apr. 1989. By 1990 the list of ecological constraints affecting work scheduling had been refined considerably. A checklist had been developed for work order schedulers which listed twelve different constraint "windows" related to anadromous streams, hatchery releases, or salmon fishing areas, one herring spawning season constraint, two marine mammal constraints, related to pupping and molting, constraints related to the presence of eagle nests, seabird colonies and waterfowl/shorebird concentrations, and recreational and subsistence harvest constraints (See USCG, "PWS, Seward and Homer Ecological Constraints," no. W1983, FOSC Exxon Valdez Archive—a checklist for shoreline cleanup scheduling used in 1990). A GIS-generated map of Prince William Sound produced by Exxon in May of 1991 to direct MAYSAP survey crews displayed hundreds of shoreline locations where eagle, seabird, or pinniped constraints existed (Exxon, "Ecological Constraints - 5/9/91 - [Eagles, Seabirds, Pinnipeds]").

47. FOSC, memorandum to distribution, 20 Apr. 1989, no. C629, FOSC Exxon Valdez Archive.

(specifically the Homer, Seward, and Kodiak areas) (figure 6.4). The ad hoc "Shoreline Cleanup Committee," which was being chaired by Andy Teal, became the Prince William Sound Interagency Shoreline Cleanup Committee (ISCC).<sup>48</sup> It would be chaired by NOAA representatives. Its mission combined the functions of the various shoreline committees that had evolved over the previous weeks.

It was given the additional task of reviewing and making recommendations to the FOSC on Exxon work plans, which were to detail planned cleanup actions on a shoreline segment-specific basis. The ISCC's membership was inclusive of all the major players in the Prince William Sound response effort to that time.<sup>49</sup>

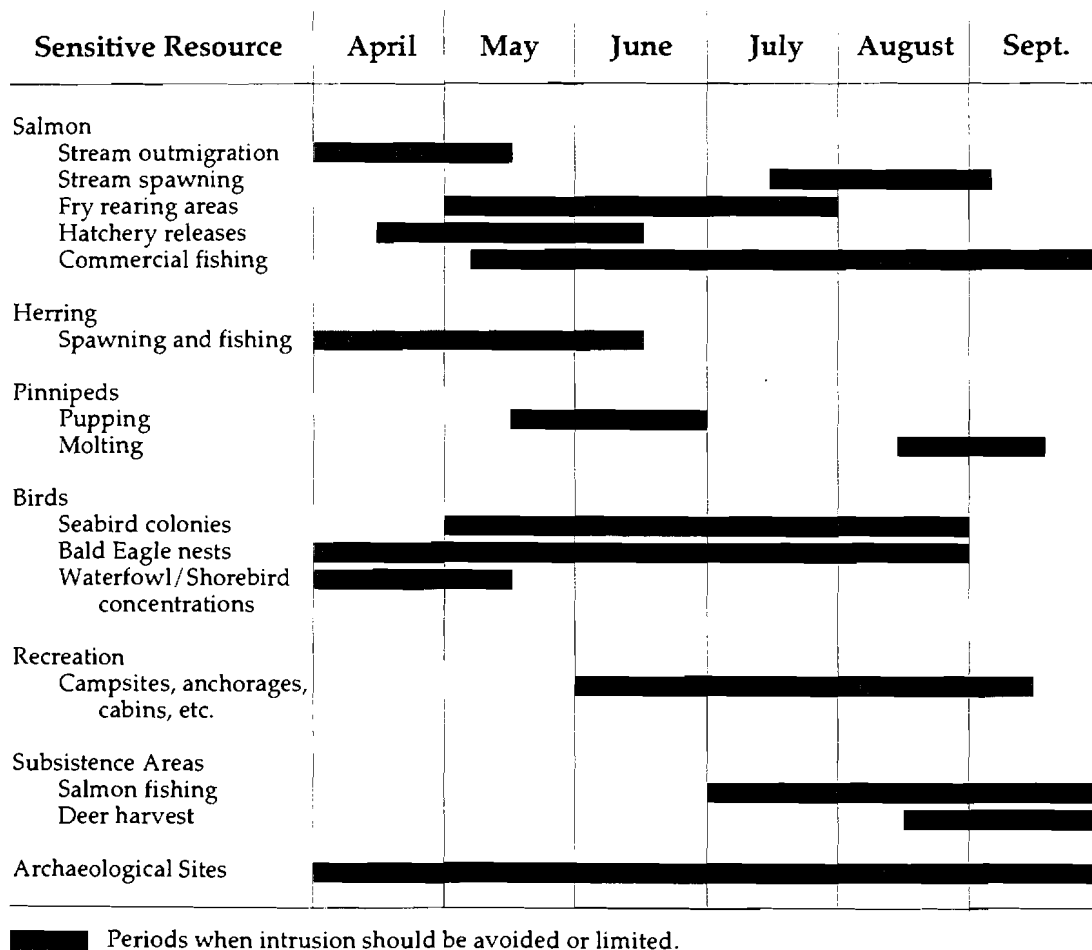


Figure 6.3. Resource constraints during the spring and summer months.

Source: Reproduced with permission from Exxon Co., USA.

Exxon was mostly in agreement with the changes wrought by these new organizational arrangements, and Vice Admiral Robbins expressed a strong willingness to expedite

48. A. Teal (Exxon), interview by Dr. T. Leschine (FOSC staff), Anchorage, 22 July 1991, no. F167, notes, FOSC Exxon Valdez Archive.

49. The ISCC was composed of ADEC, ADF&G, ADNRR, NOAA, EPA, FS, FWS, the Chugach Alaska Corporation, the Cordova District Fishermen United, and the Prince William Sound Conservation Alliance.

decision making wherever possible.<sup>50</sup> There was less harmony at a deeper level, however, as Vice Admiral Robbins disagreed with Mr. Harrison's contention that approval of a particular cleanup approach at a site should be tantamount to acceptance also of the results obtained:

The limited shoreline cleanup to date has not demonstrated that the cold water flush/float techniques for beaches and warm water wash on rock faces will necessarily provide an acceptable degree of shoreline cleanup....The approval of specific cleanup methods does not in any way imply that an acceptable degree of cleanup will be achieved. This can only be determined on a case-by-case [basis] in consultation with [ADEC] and other appropriate agencies.<sup>51</sup>

On 26 April, Vice Admiral Robbins released additional shoreline cleanup constraints, this time developed in cooperation with the state historic preservation officer (SHPO). These were to guide the pickup of tarballs and other oil-contaminated debris from shorelines. Tarballs were especially prevalent in the more weathered oil now coming ashore in western Alaska.<sup>52</sup> Western Alaska was also where many of the areas richest in archaeological artifacts were to be found, and guidance was necessary to minimize their disturbance as shorelines were cleaned.<sup>53</sup>

Vice Admiral Robbins continued to press Exxon for more comprehensive planning that would include oiled shorelines outside of Prince William Sound. Exxon, while taking steps to comply, resisted the decentralization implied by Robbins's 20 April decision to divide the response area into four sectors.<sup>54</sup> Nevertheless, on 30 April, the FOSC released a considerably more refined update of his 20 April plan, detailing more fully how the four-sector FOSC organization would work.<sup>55</sup>

Assistant on scene coordinators (AOSCs) would cover both Valdez- and Anchorage-based (for western Alaska) operations. Four ISCCs would now exist, one covering each of the Prince William Sound, Kodiak, Homer, and Seward sectors. They had similar missions and agency memberships, but different representation (and, it later turned out, modes of work) reflective of regional differences. Exxon was considered to be a non-voting member party. It was also responsible for conducting the shoreline pre-assessments and developing the work orders which the ISCCs would be reviewing. Final cleanup certifications by the FOSC would be developed in consultation with the appropriate ISCC (figure 6.5).<sup>56</sup>

50. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 23 Apr. 1989, no. C18, FOSC Exxon Valdez Archive. Among other things, Exxon advocated that the proposed seven-day period for ISCC review of its work plans be reduced to three days to expedite the cleanup, a point with which Vice Admiral Robbins agreed.

51. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 28 Apr. 1989, no. C301, FOSC Exxon Valdez Archive. This stance by Vice Adm. Robbins apparently helped convince Exxon that it should go forward with plans to seek approval for use of the shoreline cleaner Corexit 7664 as a "cleaning enhancement agent" (O. Harrison [Exxon], letter to Vice Adm. C. E. Robbins, 30 Apr. 1989, no. C292, FOSC Exxon Valdez Archive). State OSC Bill Lamoreaux also made it clear that he expected Exxon to consider "any and all" cleanup methods to eliminate oil from shorelines and adjacent waters (B. Lamoreaux [state OSC], letter to A. Teal [Exxon], 27 Apr. 1989, no. C235, FOSC Exxon Valdez Archive).

52. NOAA Hotline 17, report 54, 27 Apr. 1989.

53. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 26 Apr. 1989, no. C19; and J. E. Bittner (ADNR), letter to Vice Adm. C. E. Robbins, 25 Apr. 1989, no. C495, FOSC Exxon Valdez Archive. Archaeological artifacts are protected under the National Historic Preservation Act. See chapter 11, "Cultural Resource Constraints" for more information.

54. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 22 Apr. 1989, no. C245, FOSC Exxon Valdez Archive.

55. USCG, "Organization and Responsibilities for Shoreline Cleanup of the Exxon Valdez Oil Spill," 30 Apr. 1989, no. C644, FOSC Exxon Valdez Archive.

56. Ibid. See "Shoreline Cleanup Operation Protocol" section.

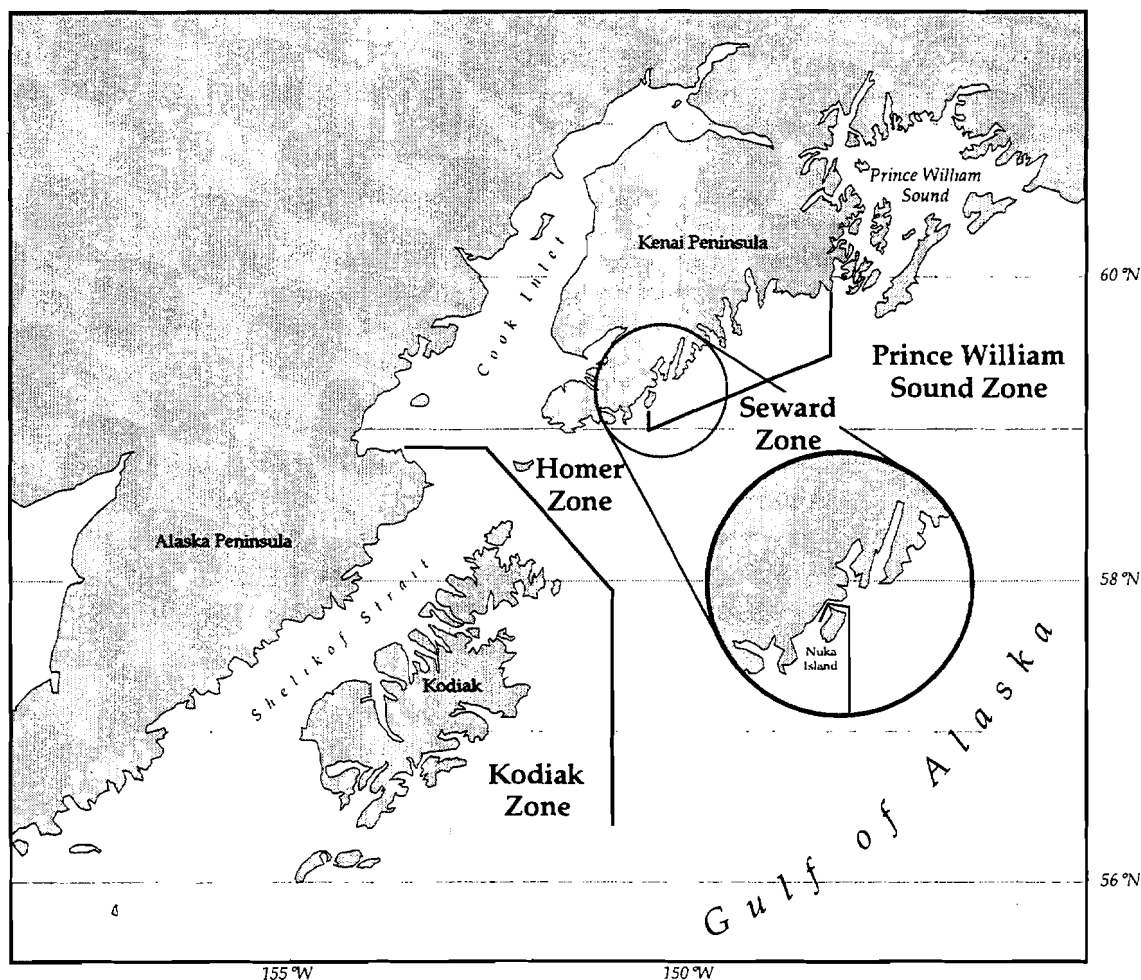


Figure 6.4. Zones of the response in Prince William Sound and the Gulf of Alaska.

Many other detailed assessment procedures, the culmination of the work that had been started by the earliest ad hoc shoreline cleanup committees in late March, were presented in the FOSC's 30 April document. These included refined guidelines for critical resource assessment, a method of assigning cleanup priorities to shoreline segments based on the degree of oiling and the presence of critical resources, and guidelines for conducting "type A" (for lightly oiled shorelines; manual collection of debris only) and "type B" (for "other" oiled shorelines; intrusive manual and mechanical cleanup permitted) preassessments.<sup>57</sup>

Exxon soon deployed a number of shoreline cleanup task forces, and each was assigned a shoreline cleanup oversight team (SCOT), made up of Coast Guard and ADEC representatives. One function of the teams was to resolve conflicts in the field as they arose.<sup>58</sup> The actual direction of workers was left to Exxon and its contractors. Multi-agency and landowner resource advisory teams (RAT) also advised the FOSC and the state OSC on shoreline cleanup practices, through interaction with the SCOTs.

57. Ibid. See generally tabs A through D of the document. All work orders for either type of cleanup required that a recommendation from the SHPO be obtained before submission to the FOSC for final approval.

58. USCG, "Field Shoreline Treatment Manual," 3 June 1989, no. C1886, FOSC Exxon Valdez Archive.

At the foundation of the shoreline cleanup organizational system were shoreline cleanup assessment teams (SCAT), organized by Exxon to conduct detailed shoreline surveys.

Each consisted of a marine ecologist, an archaeologist, and a geomorphologist who could also evaluate the extent and nature of oil contamination. The function of these teams was to:

- Evaluate treatment priorities;
- Develop treatment recommendations;
- Implement shoreline treatment when called for; and
- Evaluate post-treatment conditions.<sup>59</sup>

Although their recommendations were initially based on published data and videotape surveys, site visits soon became the basis for most SCAT recommendations.

The first of what would eventually grow to seven SCAT's was deployed to the field on 13 April. During the period between 13 April and 3 September, Exxon's SCAT teams surveyed thirty-four hundred miles of Prince William Sound and Gulf of Alaska shorelines.<sup>60</sup>

The Prince William Sound ISCC initially established the practice of daily meetings.<sup>61</sup> For the first several weeks, however, it proved necessary to meet on a twice-daily basis. The committee reviewed the shoreline data that was collected, the proposed work plan, and the resource constraints proposed by Exxon. This review would lead to a recommendation to the FOSC. In a later evaluation of the ISCC's role by several of its principal members, the combination of daily interaction, broadly based and early agency and non-governmental organization involvement in decision making, and reference to a common information base were all seen as contributing to the streamlining of decision making at a time when expeditious decision making was essential.<sup>62</sup>

The FOSC was increasingly fine-tuning the control that he had over Exxon's cleanup operations. Concern remained however, that the FOSC had still not achieved sufficient independence in his efforts to monitor Exxon's performance.<sup>63</sup> High-level administration officials expressed concerns that the FOSC still lacked the ability to verify independently the workload required to clean a particular segment, or that a segment was ready to be signed off. As White House officials saw it, the FOSC had "to know on a daily basis the...segments scheduled for cleaning and whether the work is actually being done."<sup>64</sup> He was also urged to develop indicators "that would display

59. Ibid.

60. A. Teal, "Shoreline Cleanup-Reconnaissance, Evaluation, and Planning Following The Valdez Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 150.

61. NOAA Hotline 17, report 38, 13 Apr. 1989.

62. J. Knorr et al., "The Inter-agency Shoreline Cleanup Committee: A Cooperative Approach to Shoreline Cleanup-The Exxon Valdez Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 190.

63. J. M. Loy, memorandum to file, 27 Apr. 1989, no. C302, FOSC Exxon Valdez Archive.

64. Ibid.

miles of beaches cleaned to date, [and] miles to go till 15 September 1989 [the planned shut-down date].”<sup>65</sup>

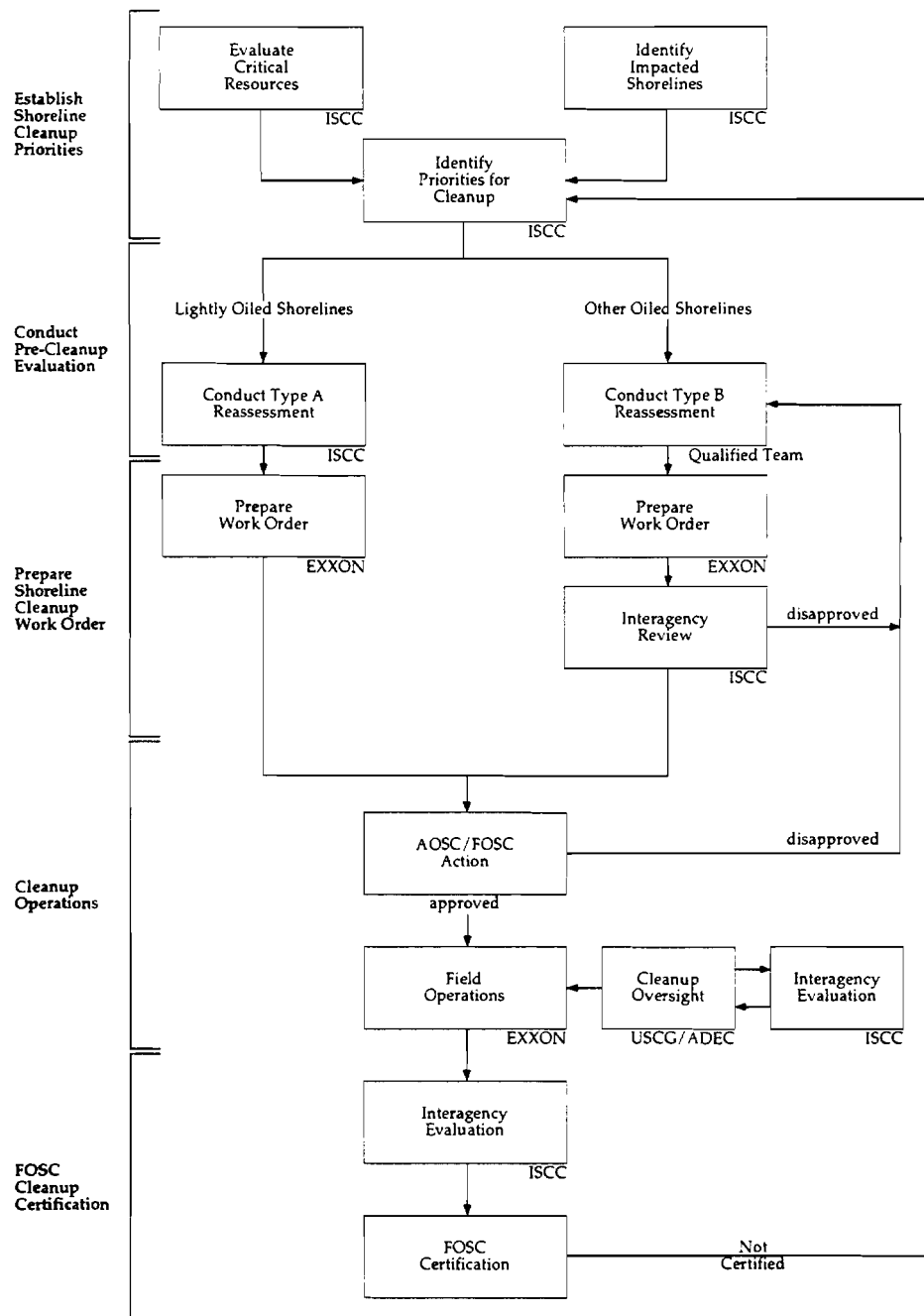


Figure 6.5. The cleanup process from planning to sign-off.

Source: USCG, "Organization and Responsibilities," 30 April 1989, no. C644, FOSC Exxon Valdez Archive.

65. Ibid. This injunction led to the development of the "clydes" system discussed in chapter 24, "Information Management."

## EXXON'S MAY ELABORATION OF ITS CLEANUP PLANNING

Exxon released amendments to its 15 April shoreline cleanup on 1 May.<sup>66</sup> The new plan called for an accelerated buildup of the shoreline workforce, and deployment of additional landing craft (LCVs and "maxibarges" to support cold flush/warm-water wash operations). Both were made possible by the arrival on 24 April of the berthing barge *USS Juneau*. Exxon's cleanup schedules now also addressed areas outside of Prince William Sound, for which the basic planning assumption at the time was that most would require only non-mechanized tarball pickup combined with natural cleansing.<sup>67</sup>

The arrival of the *Juneau* also signaled that many more workers would soon be deployed on shorelines, and what Exxon had been referring to as "Group 1," consisting of all field-deployed resources then active in the cleanup, soon became "Task Force 1." On 26 April, as the *Juneau* was being placed into service, "Task Force 2" was also deployed.<sup>68</sup>

Task forces thereafter became the main organizational units for Exxon's 1989 cleanup operations. They consisted of semi-independent units of equipment and personnel that could be deployed to establish operations in fairly broad areas, and could be re-deployed as necessary. Based from large berthing vessels, they included from five to seven hundred workers.<sup>69</sup> In addition to berthing or "mother" vessels, task forces had an assortment of barges, skiffs, skimmers, tugs, and tenders. They were, in essence, mobile communities complete with living accommodations, medical care facilities, waste disposal systems, worker transport capabilities, and specialized vessels for shoreline cleanup operations. Each task force maintained about one hundred vessels in all. Six task forces came to operate in Prince William Sound in 1989.<sup>70</sup>

Gulf of Alaska cleanup operations were mobilized less rapidly than those in Prince William Sound. By the end of May, however, "Task Forces Kodiak, Homer, and Seward" were in operation. By mid-June, over 450 workers were involved in Gulf of Alaska shoreline operations, most of them berthed in smaller, self-contained vessels. Of the three Gulf of Alaska task forces, Kodiak's was the largest, attaining a strength of about 650 at its mid-August peak. Task Force Homer had a high-water mark of approximately 200 personnel, while the Seward operation came to include 135 workers.

Exxon's 1 May plan generated considerable criticism from other parties to the response. The National Oceanic and Atmospheric Administration found it overly optimistic and lacking in details. The U.S. Forest Service's Incident Commander John Knorr urged that planning had to be based on all beaches "ever reported to be oiled" rather than on Exxon's assumptions about which ones required treatment. The Alaska Department of

66. Exxon, "Shoreline Restoration Plan," 1 May 1989, no. C1486, FOSC Exxon Valdez Archive.

67. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 1 May 1989, no. C25, FOSC Exxon Valdez Archive.

68. Exxon, "Daily Report" (part of the daily report for 26 Apr. 1989), FOSC Exxon Valdez Daily Archive.

69. S. Nauman (Exxon), "Shoreline Cleanup: Equipment and Operations," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 145.

70. Task Force 3 began operations about 7 May. Task Force 4 was mobilized in mid-May. Task Forces 5 and 6 began functioning in mid-July. Two bioremediation application teams were organized late in the summer.



Environmental Conservation and other agencies still found the plan to focus too narrowly on Prince William Sound, and ADEC disputed Exxon's assumption that three passes with cold-water washing would be adequate to clean most shorelines.<sup>71</sup> The Alaska Department of Environmental Conservation Commissioner Dennis Kelso added that:

The plan...implies that some or all lightly oiled beaches will be left solely for nature to clean. While in some cases this may be appropriate...we are unwilling to agree that all...should be left to heal on their own. The test should not be whether the oiling is heavy or light; rather, cleaning should be done wherever the benefits to the environment exceed the impacts from cleaning.<sup>72</sup>

The U.S. Environmental Protection Agency (EPA) took a position largely like that of ADEC, emphasizing that heavily oiled beaches were likely to require re-cleaning, contrary to Exxon's basic planning assumption.<sup>73</sup>

Vice Admiral Robbins found Exxon's basic planning concept to be sound, but likewise felt that Exxon's plans continued to need greater elaboration. He questioned whether the company had yet committed sufficient resources to the cleanup:

I remain seriously concerned that the investment of resources you describe will not be able to clean the 300+ miles of shoreline in the time allotted....Anticipate a review of the adequacy of the beach cleanup effort in the Spring 1990. Renewed clean up efforts may be required at that time.<sup>74</sup>

Exxon responded positively to Vice Admiral Robbins's criticisms. By 10 May, it had already increased its commitment to supply manpower and equipment significantly beyond the figures in the 1 May plan. Landing craft were to increase from 33 to 50, barges from 13 to 20, and the manpower forecast was raised from 3,400 to around 5,000.<sup>75</sup> These changes were reflected in a 24 May update to the plan.<sup>76</sup> A supplement covering Seward, Homer, and Kodiak was also released at that time.<sup>77</sup>

Vice Admiral Robbins continued to have concerns. He felt that Exxon still needed to commit more people to the cleanup effort in western Alaska, that skimmers were still not being used as aggressively as they might be to capture oil released from shorelines, and that facilities for oily debris off-loading were inadequate, particularly in Homer, where he felt they had become a "critical path" item.<sup>78</sup>

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71. J. Knorr (Chugach National Forest Valdez station), letter to Capt. D. Zawadzki, 2 May 1989, no. C33; and D. Kelso (ADEC), letter to Adm. P. Yost, 4 May 1989, no. C45, FOSC Exxon Valdez Archive.

72. Kelso, letter to Yost, 4 May 1989. State OSC Steve Provant later sent a very detailed criticism of the plan to Admiral Robbins, combining the view of both ADEC and ADF&G (S. Provant [ADEC], letter to Vice Adm. C. E. Robbins, 4 July 1989, no. C1243, FOSC Exxon Valdez Archive).

73. A. L. Ewing (EPA), letter to Vice Adm. C. E. Robbins, 9 May 1989, no. C220, FOSC Exxon Valdez Archive.

74. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 9 May 1989, no. C1490, FOSC Exxon Valdez Archive.

75. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 21 May 1989, no. C200, FOSC Exxon Valdez Archive.

76. Exxon, "Shoreline Clean-Up May 1, 1989 Plan Upgrade," 24 May 1989, no. C436, FOSC Exxon Valdez Archive.

77. Exxon, "May 1 Shoreline Clean-Up Plan" (supplement covering Seward, Homer and Kodiak task forces, 24 May 1989), no. C537, FOSC Exxon Valdez Archive.

78. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 9 June 1989, no. C455, FOSC Exxon Valdez Archive.

## STREAMLINING THE SHORELINE TREATMENT PROCESS—THE DECISION TO USE HOT WATER

The cleanup effort moved forward while these debates over the ultimate scope of Exxon's efforts continued. The Alaska Department of Environmental Conservation aerial surveys led it to dispute more strongly Exxon's estimates of the total extent of shoreline oiling,<sup>79</sup> and the re-oiling of previously treated shorelines was being seen as an increasing problem. The Seward Resource Multi-Agency Coordinating Committee (RMAC) pushed for Exxon to expand considerably the base of shorelines the SCAT teams were investigating in their area,<sup>80</sup> and Vice Admiral Robbins urged Exxon to refocus use of skimmers then being freed up from floating oil operations on the task of intercepting fugitive releases from shorelines.<sup>81</sup> Protective booms which had been placed around a number of important salmon spawning streams in western Alaska were scheduled for removal on dates spanning the period from late May to early July.<sup>82</sup>

By early May, Exxon was ready to begin shoreline cleanup in the Katmai National Park area of western Alaska.<sup>83</sup> The mid-May target dates for the cleanup of oiled seal haulout and pupping areas in Prince William Sound, which had been set in April, were reached successfully.<sup>84</sup> The state OSC expressed concerns, however, that these haulouts would soon be re-oiled by oil migrating out of the shoreline substrate. He refused to sign approval forms for the treatment that had been done.<sup>85</sup>

The FOSC continued to look for ways to expedite the cleanup. As the stranded oil continued to weather, the advantages of hot-water washing in oil removal effectiveness, in comparison to the cold-water flushing which was now the dominant shoreline cleanup method, were becoming increasingly apparent. By the end of April, both the FOSC and Exxon were anxious to use hot water to improve upon the results being obtained with cold water alone.<sup>86</sup> Exxon was concerned however about getting "out in front" of what the ISCC might approve, though it was already deploying large numbers of hot-water units where they had clear authorization to do so.<sup>87</sup> By mid-May, Vice Admiral Robbins was requesting that Exxon revise its shoreline cleanup protocols to incorporate greater reliance on hot water.<sup>88</sup> Exxon soon requested that the military assist in transporting additional water heaters (purchased in Texas) to Alaska.<sup>89</sup>

On 21 May, Vice Admiral Robbins explained in a memorandum to the Prince William Sound ISCC his decision to authorize the use of water at temperatures above 140°F.<sup>90</sup> "I

79. ADEC, "Surveys Now Show Oil on More Than 700 Miles of Alaska Shoreline," 16 May 1989, no. C133, FOSC Exxon Valdez Archive.

80. J. Sinclair (ADNR, Kenai Area), memorandum to resource MAC members, 9 May 1989, no. C562, FOSC Exxon Valdez Archive.

81. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 21 May 1989, no. C171, FOSC Exxon Valdez Archive.

82. T. Schroeder (ADF&G), letter to Seward MAC group, 16 May 1989, no. C176, FOSC Exxon Valdez Archive.

83. W. L. Rainey (Exxon), letter to Vice Adm. C. E. Robbins, 7 May 1989, no. C58, FOSC Exxon Valdez Archive.

84. W. L. Rainey (Exxon), letter to Vice Adm. C. E. Robbins, 12 May 1989, no. C100, FOSC Exxon Valdez Archive.

85. R. C. Flint (state OSC), letter to Vice Adm. C. E. Robbins, 26 May 1989, no. C332, FOSC Exxon Valdez Archive.

86. Vice Adm. C. E. Robbins, personal correspondence with Adm. P. Yost, 29 Apr. 1989.

87. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 30 Apr. 1989, no. C291, FOSC Exxon Valdez Archive.

88. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 16 May 1989, no. C136, FOSC Exxon Valdez Archive.

89. M. J. Friesenhahn (Exxon), letter to FOSC, 18 May 1989, no. C1987, FOSC Exxon Valdez Archive.

90. FOSC, memorandum to Shoreline Committee, 21 May 1989, no. C173, FOSC Exxon Valdez Archive. The routinization of use of hot water washing did not occur until after mid-June, following the Tonsina Bay tests described in the next section.

have come to the conclusion that we must move more quickly over the hardest hit shoreline area if we wish to have the greatest positive effect on protecting the environment," he wrote.<sup>91</sup> He ordered that the cleanup be refocused to attack "moveable, environmentally damaging oil" first, to make shorelines "environmentally safe" in a relatively short time, and then move on. He introduced a new multistep treatment sequence to accomplish this.

First, pooled oil would be suctioned and then deluge washing would be used to remove floatable oil. When the rate of oil removal was judged to have significantly diminished (by on scene Coast Guard and ADEC monitors), these operations would terminate. Booms would be installed along the tide line and monitored to ensure the area had been environmentally stabilized. Shorelines would then be reevaluated, and as time permitted, returned to for additional work. If necessary, this last step would carry over to the following spring. The goal was that all shorelines to be cleaned receive at least the initial treatment before the 15 September target shut down date. Vice Admiral Robbins recognized that "black rocks" might well be left behind in the initial passes.<sup>92</sup>

In his transmission of these instructions to Exxon, Vice Admiral Robbins emphasized that sign-off on "phase I" treatment by Coast Guard and ADEC monitors was no guarantee that Exxon would not have to return to the same segments later in the summer. He continued to press Exxon on coming to terms on a standard means of quantifying the miles of shoreline cleaned.<sup>93</sup> There was mounting controversy over the use of terms like "environmentally safe" and "environmentally stabilized," with EPA suggesting that phase I treatment could produce the latter condition on shorelines, but that phases II or III were likely necessary in many cases before shorelines could be considered "environmentally safe."<sup>94</sup>

Another initiative taken by Vice Admiral Robbins at this time that proved important to the direction of the shoreline cleanup was the creation of the Interagency Shoreline Research and Development (R&D) Committee, an effort coordinated by NOAA.<sup>95</sup> The testing of shoreline cleanup techniques done to date had not only served well the purpose of identifying workable techniques and defining the parameters of their use, but it had also helped build consensus on how best to proceed with the cleanup. The R&D Committee's mission was to guide the further exploration, through small-scale efficacy testing, of the mechanical cleanup technologies, chemical dispersants, and bioremediation compounds that were candidates for use in the shoreline cleanup.<sup>96</sup> The committee's first action was to recommend that a number of shoreline dispersants be tested.<sup>97</sup> In early June, NOAA released the "Field Shoreline Treatment Manual,"

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91. Ibid.

92. Ibid.

93. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 23 May 1989, no. C204, FOSC Exxon Valdez Archive.

94. A. L. Ewing (EPA), letter to Vice Adm. C. E. Robbins, 23 May 1989, no. C266, FOSC Exxon Valdez Archive.

95. Vice Adm. C. E. Robbins, letter to J. Robinson (NOAA), 22 May 1989, no. C188, FOSC Exxon Valdez Archive. The organization and function of the R&D Committee is discussed in several other places in this report.

96. CGD 17, message to commandant and G-MER, message no. R 211733Z, May 1989, no. C279, FOSC Exxon Valdez Archive.

97. J. Michel (R&D Committee), memorandum to Vice Adm. C. E. Robbins, 31 May 1989, no. C816, FOSC Exxon Valdez Archive. This subject is explored in chapter 9, "Chemical Shoreline Cleaners."

essentially a compilation of the rapidly growing body of procedures and guidances that now existed for the shoreline cleanup.<sup>98</sup> The manual established the basic shoreline segmentation management system that would guide the shoreline cleanup throughout its life. Once each shoreline segment requiring treatment was given an alphanumeric identifier, it became possible to compile a life history of the successive treatments and surveys it received.<sup>99</sup>

#### WESTERN ALASKA CONCERNS

The shoreline cleanup was slow to gear up in areas outside of Prince William Sound. The AOSC for western Alaska reported on 30 May that no type B cleanups had yet been planned for western Alaska shorelines, and that there were intimations from Exxon officials that few would be conducted.<sup>100</sup> On the same day, the Seward RMAC requested that seven areas in the Seward zone be presented to Exxon as candidates for type B cleanup.<sup>101</sup> There was some urgency to these requests, as some of the areas contained anadromous fish streams where adult pink salmon traditionally returned around 1 July. Soon, the Homer Incident Command Post (ICP) commanding officer was reminding Exxon's Homer operations supervisor that it was "imperative" that type B cleanups already approved by the FOSC for the Homer zone be started immediately.<sup>102</sup> Requests for cleanups of high priority areas identified in SCAT surveys were also coming in from the Kodiak ISCC.<sup>103</sup>

On 30 May Admiral Yost returned to Valdez for a three-day visit. The visit was focused on western Alaska, where he attended meetings of all three of the MACs. The motivation was to lend the weight of his authority to FOSC Robbins, who continued to be concerned about the level of effort Exxon was devoting to the cleanup in western Alaska.<sup>104</sup> Yost's visit culminated in a meeting with Exxon officials where an array of concerns were discussed at length. The commandant insisted that Exxon provide eight hundred workers "inside the boom," devoted exclusively to shoreline cleanup outside of Prince William Sound.<sup>105</sup>

98. FOSC, memorandum to distribution, 5 June 1989, no. C1886, FOSC Exxon Valdez Archive. The manual did not list hot water flushing among the approved techniques, but a later update ("Change One," 25 July 1989) did list among approved techniques the basic hand wand hot water flush technique that would be tested in Tonsina Bay later in June.

99. Each shoreline of any length was ultimately broken down into subdivisions as well. Thus the designator KN-405A identified subdivision A of shoreline segment 405 on Knight Island (KN).

100. Commanding officer (MSO Anchorage), memorandum to FOSC (Valdez), 30 May 1989, no. C563, FOSC Exxon Valdez Archive.

101. Resource MAC, memorandum to Seward MAC, 24 May 1989, no. C2574, FOSC Exxon Valdez Archive. The Seward MAC had been formed on 3 April, including among member agencies the city of Seward, NPS, FWS, ADNR, ADEC, ADES, ADF&G, Chugach Alaska Corporation, Cook Inlet Seiners Association, and the Kenai Peninsula Borough. The Coast Guard and Exxon were affiliates. Earlier, on 29 March, the NPS had called in an incident management team, operating under the interagency incident command system, to assist it with its own response to the spill. The RMAC (Resource MAC) was formed on 19 April with parallel agency representation. Its purpose was to provide technical expertise to the MAC. The combination of the two served as the ISCC for the Seward zone ("The Seward Multi-Agency Coordinating Groups [MAC & RMAC]," no. C2550, FOSC Exxon Valdez Archive). Similar arrangements evolved in the other western Alaska zones, with agency participation reflecting in some instances pre-existing local organizational arrangements.

102. Comdr. W. Dickerson, memorandum to J. Nalls (Exxon, Homer operations), 30 May 1989, no. C386, FOSC Exxon Valdez Archive.

103. T. Callahan (NOAA), memorandum to Comdr. R. E. Ford, 25 May 1989, no. C2585, FOSC Exxon Valdez Archive.

104. Adm. P. Yost, memorandum to secretary of transportation, 5 June 1989, no. C429, FOSC Exxon Valdez Archive.

105. Ibid. Yost also expected twenty-five hundred workers "inside the boom" in Prince William Sound and had phoned Exxon Co., USA president Bill Stevens directly to emphasize this point. He emphasized however that problems outside Prince William Sound were considered far the more politically sensitive at this point in time. Exxon's planning currently called for a peak deployment of 582 shoreline workers outside of Prince William Sound.

On 5 June, the Seward RMAC released its own proposed approach to cleanup of three of the Seward sector priority areas—Yalik Glacier Beach, Driftwood Bay, and Quartz Bay (figures 6.6 and 6.7). The problem was that some tarmat accumulations were so thick that attempted type A cleanups in the same areas had gone beyond the minimal disturbance to the surface envisioned, raising fears that beach profiles were being destabilized.<sup>106</sup> One strategy proposed was that tarmats be broken up in place, by either hand or mechanical means, and left for wave action to clean.

At about the same time, Vice Admiral Robbins had decided, on the basis of visits to several western Alaska shorelines, that a number of basic cleanup techniques, some involving the use of hot water, should be considered in attacking the problems of persistent shoreline oiling being found there.<sup>107</sup> He had decided on a test, to be conducted in Tonsina Bay, a high priority cleanup area recommended by the Homer MAC (figure 6.7).<sup>108</sup> Exxon's Homer Command Center soon announced plans to test three of the methods Vice Admiral Robbins had proposed at the Tonsina Bay site:

Hot washing with hand wands then vacuuming and/or absorbing mobile oil;  
Vacuuming pooled and mobile oil; and  
Cleaning moderately oiled logs with hot washing wands or hydro blasting.<sup>109</sup>

The tests were conducted on 14 June, and the success of the hot washing technique tested became a primary basis for its being added to the arsenal of available cleanup tools.

#### MID-SUMMER OPERATIONS AND ISSUES

By 1 July, what had started as a hot-water wash demonstration at Tonsina Bay had become part of the operational plan for cleaning the same area.<sup>110</sup> Four Exxon task forces were deployed in Prince William Sound with two more planned, while operations in western Alaska were split between shoreline operations and continued efforts to capture floating oil.<sup>111</sup> By 5 June, the shoreline segment identification system developed for Prince William Sound had been extended to the Kodiak zone by the Kodiak ISCC.<sup>112</sup> By 12 July, the Seward ICP had recommended demobilization from a total of thirty sites in the Seward sector, including several of those which the RMAC had in early June identified as special problem areas.<sup>113</sup> By mid-July all six task forces were operational in Prince William Sound, and a variety of more aggressive type B cleanups were being planned for selected areas in western Alaska.<sup>114</sup>

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106. Seward RMAC, "Methods and Logistics for Mechanical Shoreline Clean-Up in the Seward Area," 5 June 1989, no. C2579, FOSC Exxon Valdez Archive.

107. Vice Adm. C. E. Robbins, letter to L. Leatherberry (Homer MAC), 7 June 1989, no. C2557, FOSC Exxon Valdez Archive.

108. J. Reser (Homer ISCC), memorandum to Comdr. R. Asaro, et al., 17 May 1989, no. C1985, FOSC Exxon Valdez Archive.

109. G. R. Raz (Exxon, Homer operations), memorandum to Homer MAC and USCG-Homer, 12 June 1989, no. C2557, FOSC Exxon Valdez Archive.

110. ICP Homer, memorandum to FOSC Valdez, 3 July 1989, no. C770 FOSC Exxon Valdez Archive.

111. Exxon, "Shoreline Clean-Up Plan for Week of 7/2/89," 2 July 1989, no. C846 FOSC Exxon Valdez Archive.

112. Comdr. P. Smith, memorandum to Kodiak ISCC, 9 July 1989, no. C847, FOSC Exxon Valdez Archive. The Kodiak ICP had already developed its own coding system by this time, but segments were relabeled in a manner consistent with the system in use in Prince William Sound.

113. ICP Seward, memorandum to Lt. Comdr. Kelly, 12 July 1989, no. C884 FOSC Exxon Valdez Archive.

114. Exxon, "Shoreline Cleanup Plan for Week of 7/16/89," 16 July 1989, no. C1579, FOSC Exxon Valdez Archive.

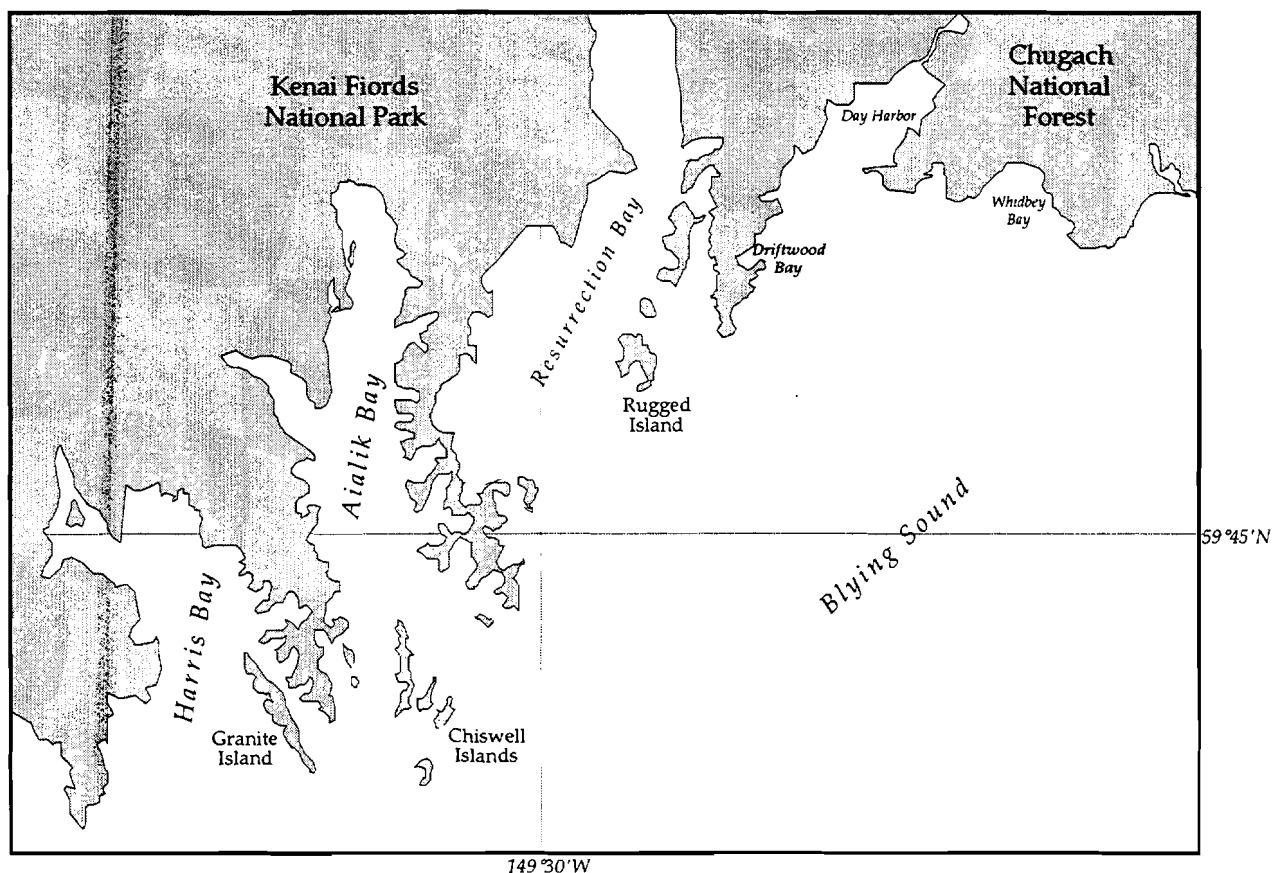


Figure 6.6. Driftwood Bay and vicinity.

Among issues which were of concern to Coast Guard response leaders was the ability of Exxon to gear up to the peak of effort it had committed to in its own planning,<sup>115</sup> and the ability of the RRT to resolve the many thorny questions on the conduct of the cleanup which had been brought to it for official action.<sup>116</sup> A 7 July meeting with Vice Admiral Robbins led RRT co-chair Captain Donald Bodron to seek help from the Washington, D.C.-based National Response Team (NRT) that served as an umbrella for the RRTs. The two issues which were proving especially vexing at this point were waste disposal and approval of chemical beach cleaners.

Noting that waste from the response was now accumulating at a rate of three hundred tons per day, Captain Bodron expressed frustration that the only response from the RRT's ADEC representative to repeated entreaties that processing of waste management permits be expedited was that the agency was not going to "bend" its rules for Exxon's benefit. He also noted that, while Exxon had demonstrated through testing that oily

115. Capt. D. Zawadzki, conversation record by Adm. P. Yost, 5 July 1989, no. C780, FOSC Exxon Valdez Archive.

116. Capt. D. E. Bodron, memorandum to Capt. Larrabee, 11 July 1989, no. C858, FOSC Exxon Valdez Archive.

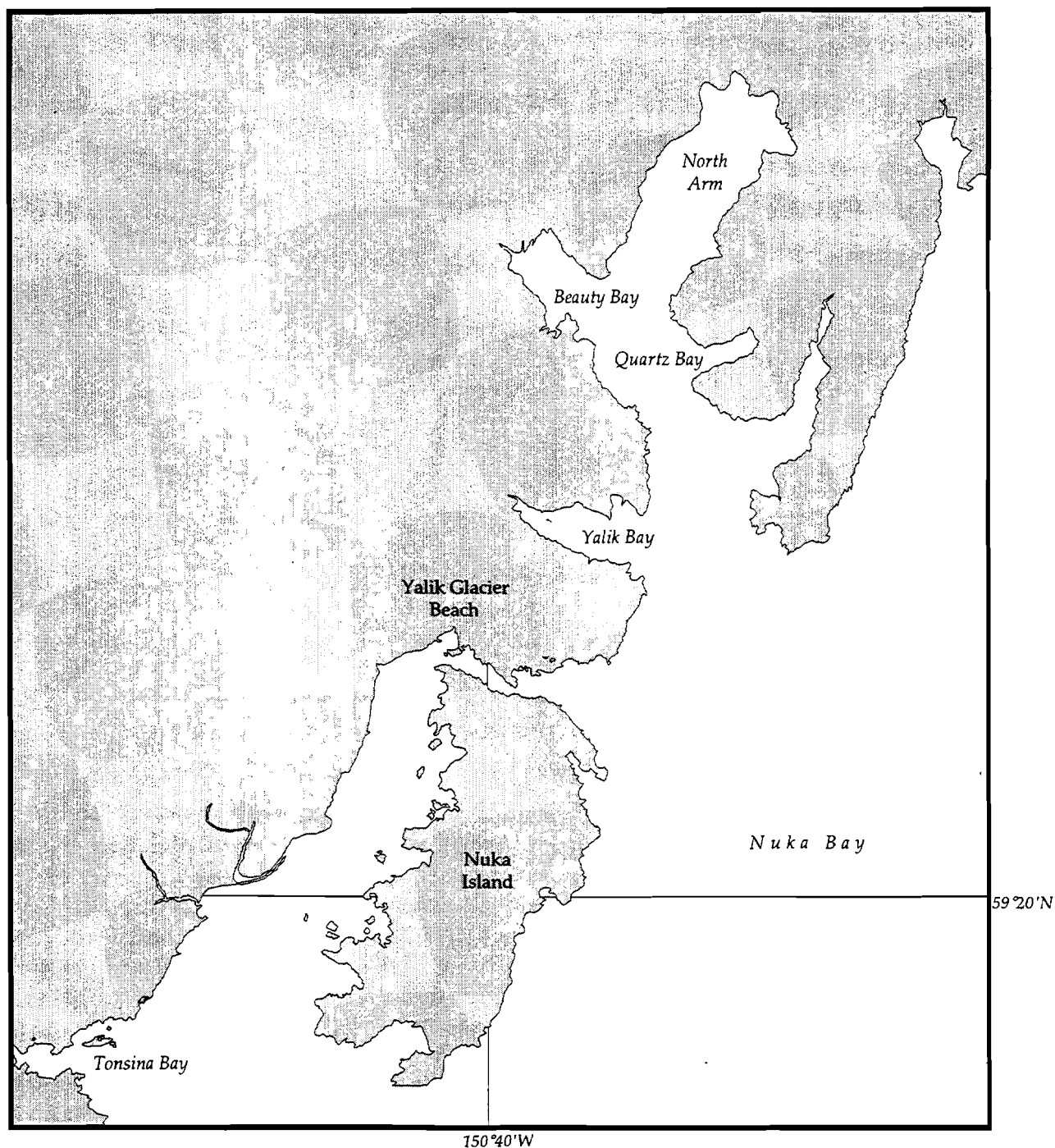


Figure 6.7. Among the priority response areas in western Alaska were Yalik Glacier Beach, Quartz Bay and Tonsina Bay.

debris did *not* constitute hazardous waste under terms of the Resource Conservation and Recovery Act (RCRA), ADEC was refusing to permit its disposal anywhere in Alaska.<sup>117</sup> As for the approval of chemical beach cleaners, he reported that member agencies were becoming increasingly vocal in their claims that they weren't being

117. Ibid. This issue is pursued in more detail in chapter 20, "Response Management Authority."

allowed to inspect adequately the data coming from the many tests they had been approving. He reported that Vice Admiral Robbins on the other hand felt that RRT members were simply requesting more and more data to stave off having to make a final decision.<sup>118</sup>

Captain Bodron termed the situation “an extraordinary problem which calls for extraordinary measures,” and he had some radical suggestions.<sup>119</sup> The NRT might ask EPA to rescind immediately the state of Alaska’s Clean Air Act authority as it pertained to oily waste incineration. He proposed also that EPA remove from the NCP the concurrence provisions which had allowed the state to veto repeatedly the use of chemical shoreline cleaners. The U.S. Department of the Interior (DOI) might also be tasked to locate a waste disposal site on federally owned land in Alaska, he suggested. He urged that the NRT either draft emergency regulations to overcome these problems or that the matter be referred to the president who might solve them by issuing an executive order.

As mid-July approached, it was increasingly apparent that shorelines would not be cleaned to the originally hoped-for extent in the remaining two months of the cleanup schedule. Commissioner Kelso wrote in follow up to a meeting with Commandant Yost:

In light of the amount of oil remaining throughout the spill area and the continuing impact on both the Alaskan environment and her people, this is an appropriate time to plan for fall and winter operations and for resumption of full-scale recovery efforts in early 1990.<sup>120</sup>

He added that he felt the cleanup effort in western Alaska continued to be deficient.

Admiral Yost appeared to be largely in agreement. He wrote the next week to Exxon Company, USA president Bill Stevens to express his:

[C]ontinued concern that clean-up results are falling behind. Re-oiling remains a problem of significant proportion....I must now note the apparent gap between actual productivity and agreed upon targets for completion by September 15th....I have asked the FOSC to look at possible winter time activity...and I agree with you that remobilization in the Spring of 1990 will be keyed to the circumstances we find at the time.<sup>121</sup>

Late in July, the Alaska Oil Spill Commission held hearings in which a number of key figures in the response appeared. In prepared testimony, FOSC Vice Admiral Robbins produced revised estimates of the amount of shoreline oiling caused by the spill and the extent of treatment to date.<sup>122</sup> In Prince William Sound 485 miles of shoreline had been oiled, and some 870 miles had been affected in western Alaska, for a total of 1,356 shoreline miles. Of these, a total of 724 miles had been treated (202 miles in Prince William Sound) and another 286 miles of shoreline were then in the process of being treated.

118. *Ibid.* This issue is pursued in more detail in chapter 9, “Chemical Shoreline Cleaners.”

119. *Ibid.*

120. D. Kelso (ADEC), letter to Adm. P. Yost, 14 July 1989, no. C908, FOSC Exxon Valdez Archive.

121. Adm. P. Yost, letter to B. Stevens (Exxon Co., USA), 20 July 1989, no. C1012, FOSC Exxon Valdez Archive.

122. USCG, “Alaska Oil Spill Commission Proposed Answers to Questions Requested in Writing Prior to August 3 Hearing in Anchorage,” 27 July 1989, no. C1272, FOSC Exxon Valdez Archive.



In light of recent deterioration in the weather, Vice Admiral Robbins was unwilling to forecast what the likely final total would be. He estimated that the number of shoreline workers directly engaged in shoreline cleanup would pass the three thousand mark on 24 July, with nearly 850 of those deployed in western Alaska.<sup>123</sup>

In response to a question about what criteria he would use to decide whether additional cleanup would be necessary in 1990, Vice Admiral Robbins made it clear that the decision would depend on field observations and inputs from the science agencies.<sup>124</sup> It was clear that he did expect treatment to take place in 1990.

#### LATE SUMMER: PLANNING FOR DEMOBILIZATION

By mid-August, the shoreline cleanup was in full stride on all fronts. But planning was already underway to start the reduction in effort that would lead to demobilization on 15 September.<sup>125</sup> NOAA's Computer-Aided Management of Emergency Operations (CAMEO™) Valdez database showed that, by the end of the third week in August, 351 miles of shoreline had been treated in Prince William Sound, and 670 in western Alaska.<sup>126</sup>

How much shoreline remained to be treated was a statistic very much open to debate, with CAMEO data suggesting the number could be as high as 221 miles in Prince William Sound and 1,075 miles in western Alaska.<sup>127</sup> There was much concern, particularly in western Alaska, about shoreline known to be oiled but not likely to see satisfactory oil removal before the season ended.<sup>128</sup> Vice Admiral Robbins planned an early September visit to his western Alaska operations to discuss the status of the cleanup and Exxon's commitment to return in the spring.<sup>129</sup>

Demobilization planning for the FOSC's internal operations had begun in early July.<sup>130</sup> The state of Alaska argued for a proactive winter operation, one that would continue at a high level in each area until conditions of weather forced it to close. Exxon would need to be prepared to pursue releases from still-oiled shorelines as weather permitted and would continue to treat shorelines in protected areas as weather and safety permitted.<sup>131</sup> The FOSC released his own planning directive for Coast Guard winter

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123. *Ibid.* In testimony on 3 August, Exxon general manager O. Harrison estimated that 3,500 workers were now engaged directly in shoreline cleanup (State of Alaska Oil Spill Commission, "Statement of Otto Harrison General Manager, Valdez Operations, Exxon Company, USA, Before the State of Alaska Oil Spill Commission, August 3, 1989," 31 July 1989, no. C1310, FOSC Exxon Valdez Archive).

124. *Ibid.*

125. ICP Homer, memorandum to FOSC Valdez, 15 Aug. 1989, no. C1602, FOSC Exxon Valdez Archive. This memorandum informed the FOSC that Exxon had just presented its plan for completing "phase one" operations in the Homer zone.

126. CAMEO staff, memorandum to FOSC operations, 22 Aug. 1989, no. C1110, FOSC Exxon Valdez Archive.

127. *Ibid.* These numbers represented the difference between shoreline segments subject to SCAT assessments (and found to be oiled) and those actually treated. Much of the oiling would have been in the "light" category.

128. Seward Resource MAC, memorandum to Seward MAC, 22 Aug. 1989, no. C2583; Supervisor (ICP Seward), memorandum to AOSC (WAK), 26 Aug. 1989, no. C1802; Oil Spill Response Center, "Oil Spill Protection Update," 23 Aug. 1989, no. C2153; C. Yanagawa (Chugach Alaska Corporation), memorandum to ISCC, 31 Aug. 1989, no. C2109; and J. Bauer (ADEC), memorandum to chairperson (ISCC), 31 Aug. 1989, no. C2072, FOSC Exxon Valdez Archive.

129. USCG, "Homer Issues Which May Come Up During VADM Robbins' Visit Friday 1 September to Sunday 3 September 1989," 31 July 1989, no. C1931; USCG, "Admiral's Issues from Kodiak ICP," 31 July 1989, no. C1940; and supervisor ICP Seward, memorandum to AOSC (WAK), 31 July 1989, no. C1941, FOSC Exxon Valdez Archive.

130. Comdr. H. E. Copeland, memorandum to chief of staff, 7 July 1989, no. C1781, FOSC Exxon Valdez Archive.

131. S. Provant (state OSC), letter to Vice Adm. C. E. Robbins, 12 July 1989, no. C1029, FOSC Exxon Valdez Archive. G. A. Reiter, commanding officer of the USCG Pacific Area Strike Team, argued against leaving a work force in the field until

operations on 14 August.<sup>132</sup> The plan called for a reduced Coast Guard presence in all sectors with surveillance and assessment patrols as conditions permitted. The ICPs in Homer, Seward and Kodiak would remain open. Winter operations would also include preparations for the follow-on operations which were to take place in 1990.

Vice Admiral Robbins conveyed his expectations for Exxon's winter operations in a 6 August letter to Otto Harrison:

A total pull out of all equipment and personnel would cause me great concern....[C]ontingency operations for the winter season in each sector [should] include firm commitments for pre-positioning equipment, monitoring, and having a workforce on tap capable of responding if oil begins to spread further, and as weather conditions permit a response.<sup>133</sup>

Exxon released its own winter plan on 15 August. It projected that all "significantly impacted" shorelines would receive at least initial treatment ("phase one") by 15 September, including retreatment of many that had been re-oiled.<sup>134</sup> The plan also promised to leave in place a contingency response capability to protect against additional oil impacts, gather data, and conduct assessment activities related to the need for cleanup in the spring of 1990. By the company's own estimate, 265 miles of Prince William Sound shoreline had been treated or received Coast Guard signoff (with 80 miles yet to treat), and 651 miles of western Alaska shorelines had likewise been treated or signed off (with 81 miles remaining).<sup>135</sup>

Upon release of the plan, responses from other organizations were again strong. Native groups argued for a much more aggressive winter cleanup,<sup>136</sup> and announced plans to conduct their own cleanup programs after 15 September.<sup>137</sup> The Prince William Sound Conservation Alliance (PWSCA) renewed calls for federalization of the response,<sup>138</sup> and the Cordova District Fishermen United (CDFU) planned a demonstration in Port Valdez for 9 September.<sup>139</sup> The Homer MAC wrote to Admiral Yost to express a variety of concerns, among them that there continued to be serious subsistence impacts on native communities, and that cleanup needed to continue throughout the winter, given what MAC members saw as very incomplete attention to

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winter storms were upon them, but believed a vessel able to place and remove snare booms as necessary could help alleviate the problem of releases from oiled shorelines recontaminating other areas during the winter (Commanding officer Pacific Area Strike Team, memorandum to chief of operations, FOSC, 26 July 1989, no. C1148, FOSC Exxon Valdez Archive).

132. Capt. D. Zawadzki, "FOSC Planning Directive for Exxon Valdez Spill Response," 14 Aug. 1989, no. C1800, FOSC Exxon Valdez Archive.

133. Vice Adm. C. E. Robbins, letter to O. Harrison, 6 Aug. 1989, no. C1440, FOSC Exxon Valdez Archive. Mr. Harrison had indicated in his 3 August testimony to the Alaska Oil Spill Commission that Exxon's planning for winter operations was already well underway.

134. Exxon, "Status and 1989-90 Alaska Winter Program," 15 Aug. 1989, no. C1874, FOSC Exxon Valdez Archive. In western Alaska, this meant that all scheduled "type A" and "type B" cleanups will have been completed. The plan called for three hundred company and contract employees to work through the winter, with operations headquartered in Anchorage rather than Valdez. A science program with extensive field sampling throughout the winter was also proposed.

135. *Ibid.*

136. C. W. Totemoff (Chenega Corporation), letter to Rear Adm. D. E. Ciancaglini, 22 Aug. 1989, no. C1699, FOSC Exxon Valdez Archive.

137. F. Carlson and C. Christensen (city of Larsen Bay), letter to Rear Adm. D. E. Ciancaglini, 18 Aug. 1989, no. C1706, FOSC Exxon Valdez Archive.

138. B. Good (PWSCA), letter to Vice Adm. C. E. Robbins, 21 Aug. 1989, no. C1824, FOSC Exxon Valdez Archive.

139. Commanding officer (MSO Valdez), memorandum to FOSC, 22 Aug. 1989, no. C1694, FOSC Exxon Valdez Archive.

date to oiled shorelines in the Homer zone.<sup>140</sup> The letter, widely distributed, provoked an angry response from Exxon officials.<sup>141</sup>

The Alaska Department of Environmental Conservation offered detailed and pointed criticism of many of the contentions and planned-for response capabilities described in Exxon's winter plan:

Exxon has fallen short of their stated objective to "leave all shorelines in Prince William Sound and the Gulf of Alaska 'environmentally stable'." ...Significant additional efforts are needed...[o]il has penetrated over two feet deep on some beaches and continues to bleed into the open water causing sheens. Wildlife fatalities, especially birds in the Kodiak area, continue to increase. Fresh tarballs regularly wash up on previously treated or uncontaminated shorelines....This evidence clearly indicates that shorelines are not environmentally stable.

We should be concentrating on the methods that remove the most mobile oil and developing techniques that will remove subsurface oil. It is our belief that subsurface oil poses the greatest potential threat to the environment.<sup>142</sup>

The FOOSC nevertheless approved the plan, and by late August it had begun to influence Coast Guard planning for the remaining weeks of the 1989 response. It was agreed by the ISCC that shoreline segments for which "no treatment recommendations" (NTRs) had been made would not have to be inspected by Coast Guard monitors before signoff, provided that all were reassessed in the spring.<sup>143</sup>

National Oceanic and Atmospheric Administration SSC David Kennedy presented a plan for winter scientific studies to Vice Admiral Robbins on 7 August.<sup>144</sup> The plan involved establishing reference stations on cleaned and uncleared sites so that winter recovery or re-oiling could be monitored (figure 6.8). Vice Admiral Robbins gave the plan his general approval.<sup>145</sup> Further refinements in the study plan were released by NOAA in early September, focusing on the selection of sites which could help determine the extent of natural recovery as determined by shoreline type, degree of initial oiling, treatment applied during 1989, and exposure to winter wave action.<sup>146</sup> The study plan generally found approval from other agencies, but western Alaska groups complained that the proposed sites were concentrated too heavily in Prince

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140. M. Hedrick (Homer MAC), letter to Adm. P. Yost, 21 Aug. 1989, no. C1761, FOOSC Exxon Valdez Archive. Rear Adm. Ciancaglini met with the Homer MAC in response to this letter on 22 August (Oil Spill Response Center, "Oil Spill Protection Update," 23 Aug. 1989, no. C2153, FOOSC Exxon Valdez Archive).

141. M. Taylor (Exxon), letter to M. Hedrick (Homer MAC), 1 Sept. 1989, no. C560, FOOSC Exxon Valdez Archive.

142. S. Provant (state OSC), letter to Rear Adm. D. E. Ciancaglini, 23 Aug. 1989, no. C1834, FOOSC Exxon Valdez Archive. The letter includes several pages of detailed criticisms of the plan. In an earlier letter, Mr. Provant outlined a number of winter field activities he wanted Exxon to conduct cooperatively with state and federal agencies (S. Provant, letter to Rear Adm. D. E. Ciancaglini, 18 Aug. 1989, no. C1918, FOOSC Exxon Valdez Archive). O. Harrison, in reply, felt that Exxon's plan had the flexibility to encompass much of what Mr. Provant desired, but urged the FOOSC not to require that the specifics be incorporated into it (O. Harrison, letter to Rear Adm. D. E. Ciancaglini, 19 Aug. 1989, no. C1695, FOOSC Exxon Valdez Archive). Rear Adm. D. E. Ciancaglini's response to Mr. Provant makes it clear that he shared Exxon's view, that greater detail would render the plan a less effective instrument (Rear Adm. D. E. Ciancaglini, letter to S. Provant, 28 Aug. 1989, no. C1918, FOOSC Exxon Valdez Archive).

143. S. Christopherson (ISCC), memorandum to Vice Adm. C. E. Robbins, 5 Sept. 1989, no. C2237; and AOSC (PWS), memorandum to file, 8 Sept. 1989, no. C566, FOOSC Exxon Valdez Archive.

144. D. Kennedy (NOAA), memorandum to Vice Adm. C. E. Robbins, 7 Aug. 1989, no. C1382, FOOSC Exxon Valdez Archive.

145. Vice Adm. C. E. Robbins, memorandum to D. Kennedy (NOAA), 11 Aug. 1989, no. C1526, FOOSC Exxon Valdez Archive.

146. NOAA, "Study Plan for Winter Shoreline Monitoring Plan," no. C2299, FOOSC Exxon Valdez Archive.

William Sound and recommended a number of western Alaskan sites for inclusion in the study.<sup>147</sup>

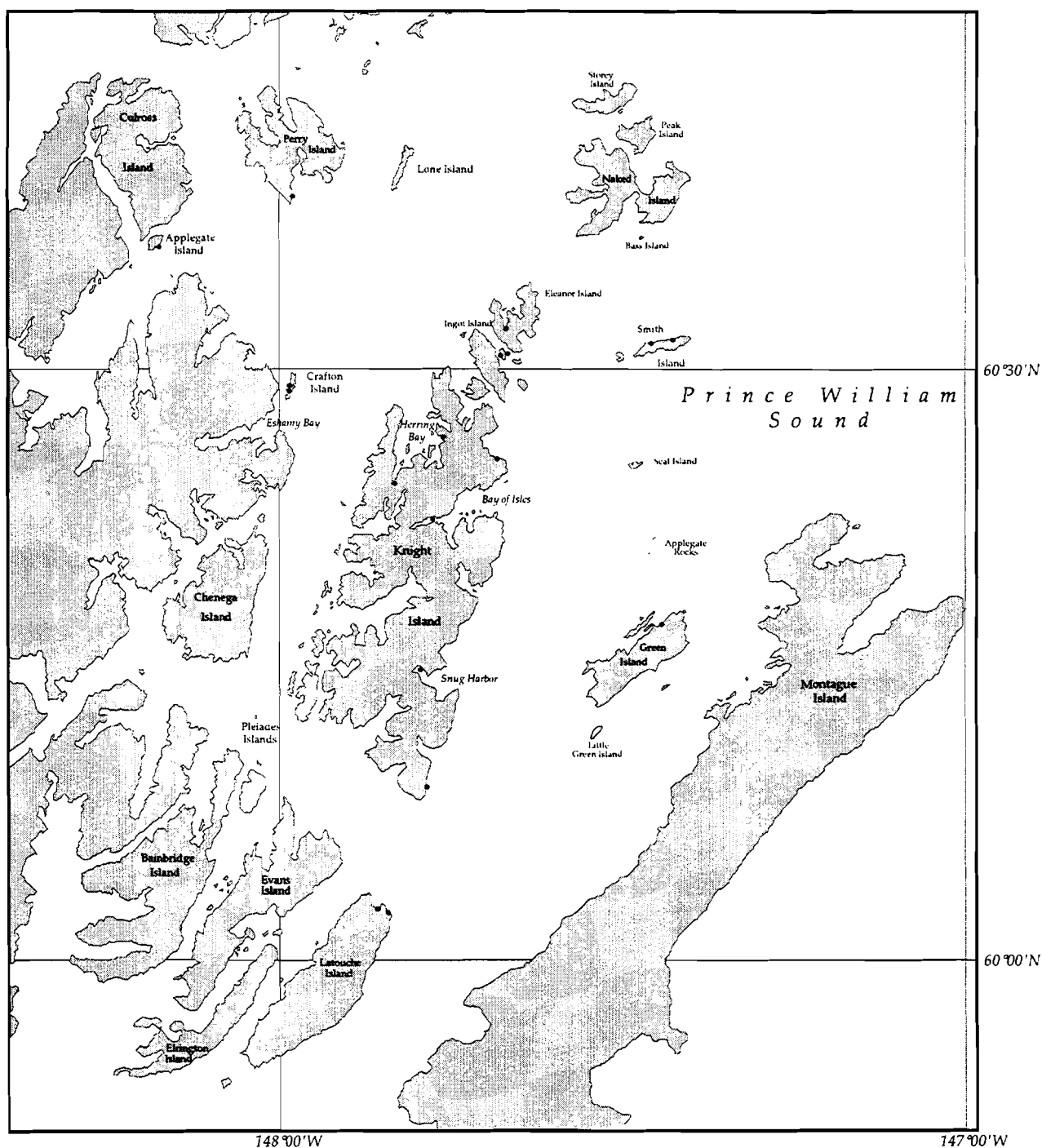


Figure 6.8. Locations of NOAA winter study stations.

Source: NOAA, "Exxon Valdez Oil Spill Winter Study Data Sharing Program" (prepared for the Hazardous Materials Response Branch of NOAA, Jan. 1990), vol. 1.

147. P. Gates (DOI), letter to Vice Adm. C. E. Robbins, 21 Sept. 1989, no. C2408; and R. Brodie (mayor, Kodiak), letter to Rear Adm. D. E. Ciancaglini, 29 Sept. 1989, no. C1952, FOSC Exxon Valdez Archive.

## TRANSITION TO WINTER OPERATIONS

Early in September, the shape of winter operations began to emerge. Exxon would generally provide only contingency emergency response capabilities, to react to re-oiling "where practicable."<sup>148</sup> In the Kodiak region, local communities could elect to monitor shoreline conditions in their areas, and pick up mousse and tarballs. Exxon would provide two vessels in western Alaska, but would not necessarily be available to service waste collection activities on a regular basis. A road crew would operate in the vicinity of the city of Kodiak to react to shoreline oiling as circumstances permitted.<sup>149</sup>

The Coast Guard would monitor any shoreline treatment or other response-related activities that occurred.<sup>150</sup> Vice Admiral Robbins requested that the ISCC and MACs continue to meet through the winter, and announced the organization of the Shoreline Coordinating Group (SCG), an advisory body which would be chaired by NOAA, and would include also the chairs of the three MACs and the Prince William Sound ISCC.<sup>151</sup> The ICPs would remain open, but the FOSC would relocate his headquarters to Anchorage. Response operations were being quickly wound down at this point. On 28 September the U.S. Navy announced that its skimming operations in the response had been terminated.<sup>152</sup> Rear Admiral David Ciancaglini replaced Vice Admiral Robbins as FOSC on 30 September.

On 26 September the final totals on the extent of shoreline oiling and treatment for 1989 were released. The NOAA CAMEO data, based on the SCAT surveys, revealed that of the 790 shoreline miles identified as oiled in Prince William Sound, 664 miles had been treated and 126 had been signed off with NTR recommendations. In the combined western Alaska sectors (Kodiak, Homer, and Seward), 1,999 miles of the 2,455 shoreline miles identified as oiled had been treated, and 457 miles had been signed off with NTR recommendations (table 6.1).<sup>153</sup>

## WINTER MONITORING AND CLEANUP EFFORTS

The low-level approach to winter response proposed by Exxon and accepted by the Coast Guard was less acceptable to the state. On 15 September Governor Cowper announced a state winter cleanup plan.<sup>154</sup> By late in the month, both the U.S. National Park Service

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148. FOSC, memorandum to FOSC staff, 3 Sept. 1989, no. C2064, FOSC Exxon Valdez Archive.

149. *Ibid.*

150. FOSC, memorandum to Interagency Shoreline Cleanup Committee, 6 Sept. 1989, no. C2277; and FOSC, memorandum to MAC, 28 Sept. 1989, no. C1801, FOSC Exxon Valdez Archive.

151. *Ibid.* Vice Adm. Robbins's initial announcement of the creation of a "Shoreline Executive Committee" had provoked fears from western Alaskan representatives that he had created a new decision making body that would isolate them from decision making, causing him to rename and reorganize the group into the SCG. The earlier group had Exxon and FOSC membership, the latter did not. The SCG was co-chaired by NOAA's Sharon Christopherson and Joe Talbott.

152. Supervisor of salvage OSC (Valdez), memorandum to FOSC, 28 Sept. 1989, no. C1534, FOSC Exxon Valdez Archive.

153. USCG, "Final Cameo Report," 26 Sept. 1989. These values appear to overestimate substantially the true shoreline miles oiled as entire shoreline segments were counted as oiled in the CAMEO database when the SCAT survey revealed that any portion was oiled. Exxon produced what it considered to be a truer picture of the original extent of shoreline oiling in 1990. In the Exxon estimate, only about 1,300 miles of shoreline were found to be oiled (Owens, "Shoreline Conditions Following the Exxon Valdez Spill as of Fall 1990").

154. Office of the governor, "Cowper Unveils Five-Part State Winter Cleanup Plan," news release no. 89-150, 15 Sept. 1989, no. C2308, FOSC Exxon Valdez Archive. The state's winter plan is covered in more detail in chapter 13, "Waste Management."

(NPS) and FWS had outlined their own plans for winter operations.<sup>155</sup> The Alaska Department of Environmental Conservation adopted a “management by objectives” approach to guide its own winter plan.<sup>156</sup> The Seward MAC, feeling that none of Exxon, ADEC, or NOAA had adequately considered their needs in winter planning, soon announced their own winter operations.<sup>157</sup> The Kodiak ISCC proposed a comprehensive winter monitoring program for western Alaska.<sup>158</sup>

One of Rear Admiral Ciancaglini’s earliest actions as FOSC was to ask Exxon to assure that its own winter monitoring program reflected the many concerns that had been raised over specific issues or sites over the preceding weeks. Exxon released an update of its “Winter Shoreline Monitoring Program,” with an adjusted sampling design, on 26 October. One objective of the updated plan was “to provide scientific documentation for informed decision making regarding Exxon’s 1990 program.”<sup>159</sup> Many other organizations were nevertheless motivated to establish independent efforts, in part due to misgivings over the proposition that decisions on the 1990 cleanup would depend on information developed by Exxon. The extended argumentation that had occurred over the previous summer among Exxon and other parties regarding the extent of shoreline oiling and the efficacy of the treatments applied, coupled with litigation concerns, appeared to drive these efforts.

The early November meetings of the Sector Coordinating Group provide a window on events and concerns as the first winter of the response was settling in. Exxon had by then completed the first two rounds of its Prince William Sound surveys, EPA’s bioremediation studies were in process, ADF&G was monitoring salmon streams, and FWS and local MAC groups were conducting damage assessment and wildlife monitoring studies. Hatchery protection planning, involving CDFU, ADEC, and the Coast Guard, was underway as well.<sup>160</sup> All three of the sector MAC/ISCCs were working to coordinate efforts to support their own monitoring interests. There was confusion about the role of the MACs and ISCCs in the local and state-sponsored winter cleanup activities that had gotten underway.

Among other problems confronting the Coast Guard at the time were the slow pace of efforts to obtain clearances from the state for the “set aside” sites that were part of the NOAA study plan, the need to develop waste management plans for the several non-Exxon winter cleanup programs that were emerging, and assuring that these programs conformed with the state and federal standards that had been developed during the summer.<sup>161</sup>

155. Action regional director (NPS, Alaska region), memorandum to DOI RRT representative, 26 Sept. 1989, no. C1559; and regional director (FWS), memorandum to DOI RRT representative, 26 Sept. 1989, no. C1549, FOSC Exxon Valdez Archive.

156. S. Provant (ADEC), memorandum to M. Kuwada (ADF&G) and B. Copeland (ADNR), 2 Oct. 1989, no. W27, FOSC Exxon Valdez Archive.

157. Multi-agency advisory committee (MAC), “Overview of Seward Zone Winter Operations,” undated, no. W94, FOSC Exxon Valdez Archive.

158. J. Talbott (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, undated, no. W9, FOSC Exxon Valdez Archive.

159. A. Teal (Exxon), memorandum to Rear Adm. D. E. Ciancaglini, 26 Oct. 1989, no. W150, FOSC Exxon Valdez Archive.

160. USCG, “Sector Coordinating Group Committee Report,” 2 Nov. 1989, no. W1981, FOSC Exxon Valdez Archive.

161. Sector Coordinating Group, “Meeting Summary,” 3 Nov. 1989, no. W940, FOSC Exxon Valdez Archive. Coast Guard and Exxon concern with the Kodiak Environmental Cleanup Effort (KECE) “bounty bag” program is especially evident in correspondence from this period (ICP Kodiak, memorandum to MSO Anchorage, 7 Nov. 1989, no. W138; Supervisor [ICP

The Coast Guard position on these non-Exxon winter operations was that, if ADEC was overseeing them, then the Coast Guard would neither approve nor sanction them. ICPs were permitted to issue "statements of objection" or "no objection," in consultation with the FOSC. Incident command posts were expected to ensure that work orders were approved by the appropriate MAC or ISCC, that land managers had issued the necessary permits, that certified vessels and licensed personnel were used, that waste management plans were in place, and that personnel safety concerns were being addressed by the sponsoring parties.<sup>162</sup>

Rear Admiral Ciancaglini expected the ISCC/MACs to review the plans. The Coast Guard worked to ensure that study sites were protected from these cleanups, and that plans had been reviewed by the SHPO for compliance with archaeological protection requirements. On-site waste storage required approval by ADEC.<sup>163</sup> Rear Admiral Ciancaglini noted that the many enforcement issues engendered by these programs in western Alaska were the responsibility of Marine Safety Office Anchorage rather than the FOSC, as they were not being carried out under FOSC direction.<sup>164</sup>

Observations coming in from the field on the state of shoreline oiling indicated that in many cases visible oiling had decreased, including on many segments that had received bioremediation treatments late in the summer. On at least one high energy cobble shoreline being monitored the depth of penetration of oil into the subsurface had increased, however, and several shorelines were showing localized accumulations of mousse patties.<sup>165</sup>

Such observations served to reinforce the need for more systematic monitoring, and on 21 November the comprehensive Winter Interagency Monitoring Program for the Gulf of Alaska (which came to be referred to as WIMP) was approved by Rear Admiral Ciancaglini.<sup>166</sup> The Winter Interagency Monitoring Program, which covered the entire western Alaska region, appears to have been the fruition of considerable effort on the part of the Kodiak ISCC in particular, in partnership with NOAA and in coordination with the other western Alaska MAC/ISCCs.

Reports from the field in late November indicated that the cold had now caused much of the remaining surface oil to solidify into an asphalt-like consistency which could be expected to re-liquefy in the spring. Heavy storms were eroding many shorelines and in the process releasing subsurface oil. This was causing sheening, but at diminished rates as time went by. Seven shoreline segments in particular had been identified as contributing especially to such sheening as was taking place. Subsurface oil in high energy areas was decreasing significantly as a result of the reworking of beach surfaces by winter wave action.<sup>167</sup>

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Kodiak], memorandum to senior investigating officer [MSO Anchorage], 13 Nov. 1989, no. W139; and J. Peavey [Exxon], letter to J. Selby [mayor, Kodiak Island Borough], 17 Nov. 1989, no. W335, FOSC Exxon Valdez Archive).

162. FOSC, E-mail message to ICPs, 15 Nov. 1989, no. W129, FOSC Exxon Valdez Archive.

163. Rear Adm. D. E. Ciancaglini, letter to J. Talbott (NOAA), 21 Nov. 1989, no. W222, FOSC Exxon Valdez Archive.

164. *Ibid.*

165. USCG, "Sector Coordinating Group Committee Report," 2 Nov. 1989, no. W1981, FOSC Exxon Valdez Archive.

166. Rear Adm. D. E. Ciancaglini, memorandum to distribution, 21 Nov. 1989, no. W130, FOSC Exxon Valdez Archive. Attached is a packet including the FOSC release cover sheet and the program description.

167. USCG, "Briefing Packet, ADM-20 Nov. Briefing," 20 Nov. 1989, no. W419, FOSC Exxon Valdez Archive.

## RE-THINKING THE FUTURE DIRECTION OF THE CLEANUP

The observations coming in from the field during early winter were leading to some shifts in thinking on what the direction of the cleanup in 1990 should be. In mid-December, the FOSC suggested in a memorandum to the RRT that further cleanup should be:

[U]ndertaken in a manner which complements natural processes....Efforts should be made to accelerate natural recovery in shoreline areas used for subsistence lifestyles....All cleanup efforts should be scaled to a minimum consistent with the problem being addressed. No greater human stress should be placed on the area than is necessary to achieve the desired result.<sup>168</sup>

The FOSC proposed in addition that most cleanup be concentrated in sheltered areas that have biological or human use values which would be jeopardized in the short term by the presence of oil. Bioremediation should be applied at the earliest opportunity, and surface tarmats should be removed or broken up with minimal use of heavy equipment. "Excavation" was justified in the case of contaminated shorelines in the vicinity of shellfishing areas, but chemical beach cleaners (then under active consideration) should be avoided in such areas. Following the close of the 1990 fishing season, areas with high concentrations of subsurface oil should be tilled and reshaped as necessary to maximize exposure to 1990 storms.<sup>169</sup>

As the year ended, the FOSC's plan was to have a preliminary action plan for 1990 in place by February, to begin the cleanup by about 1 April, and to maintain a presence until mid-September. Alaska Regional Response Team agencies were asked to provide their inputs to the 1990 plan by 8 January.<sup>170</sup>

In spite of the extensive set of working relationships that had developed with Exxon during the 1989 cleanup, and despite the company's repeated assurances that it would indeed return to the cleanup in 1990, Coast Guard Headquarters found it imprudent to go into the 1990 season without a contingency plan that included the possibility of federalization of the response. The scenario developed at Coast Guard Headquarters estimated that funding of approximately \$10 million per day would be needed if the response developed to its 1989 levels, and that "massive" contracting and legal support would be necessary.<sup>171</sup>

As the memorandum prepared by Coast Guard Headquarters put it:

The last scenario, despite its low probability, is significant. It would occur in an environment of the most intense interest/scrutiny by the Administration, Congress, and the press. The suit recently filed by Alaska against Exxon may change Exxon's definition and

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168. Comdr. D. D. Rome, memorandum to RRT members, 12 Dec. 1989, no. W254, FOSC Exxon Valdez Archive.

169. *Ibid.* As will be seen in the following chapter, the basic philosophy articulated here did carry over into 1990, although many of the details did not.

170. *Ibid.*

171. USCG, "Expansion of FOSC Spring '90 Operations Scenarios," 15 Nov. 1989, no. W132, FOSC Exxon Valdez Archive.



discharge of its commitments to treatment, liability, etc. To be prepared, we must draw up a contingency plan for this single scenario.<sup>172</sup>

## SUMMARY

Within a few months of the grounding of the *Exxon Valdez*, the response effort had come to focus almost exclusively on shoreline cleanup. This focus would remain through the conclusion of the response in June of 1992. While the basic shape of shoreline cleanup decision making emerged very early in the 1989 response, the formal decision making structure would continue to evolve into 1990, when the Technical Advisory Group (TAG) would replace the ISCC as the principal FOSC contact on shoreline cleanup decisions. Similarly, the details of what was to be done on the shorelines also went through considerable evolution through the 1989 response season, but underwent a much more substantial shift in the transition from 1989 to 1990 operations.

The basic idea that took shape in 1989 was that shoreline cleanup decision making was to be based on: (a) priority orderings of shorelines for cleanup, made on the basis of resource sensitivities and assessments of the threat they posed in their oiled condition; (b) consideration of the suitability of particular shoreline cleanup techniques, made on the basis of oiling condition, shoreline type, and resource sensitivities; and (c) criteria to determine the endpoint of cleanup operations (as well as when not to clean), flexible enough to be applied on a segment-by-segment basis. Moreover, operations had to go forward to the extent possible under consensus among affected land managers, resource agencies, and local groups with a direct stake in the results of the cleanup. Failing that, consultation at least had to take place.

The 1989 shoreline cleanup took place under unprecedented scrutiny by the news media, the public-at-large, and by both governmental response organizations and non-governmental organizations whose interests were affected by the spill. Vice Admiral Robbins, who established the initial shoreline cleanup organizational structure, did so in a way that provided an umbrella for the many formal and informal organizational interactions that had developed prior to his arrival on scene. This meant that many aspects of decision making would remain decentralized, even as the larger organization was brought more firmly under FOSC control. In addition, the process of achieving consensus on the shoreline cleanup would be made more difficult by the sheer diversity and strength of opinions held by the many participants now drawn into formal advisory roles.

Beyond these organizational considerations, the shoreline cleanup was driven from the start by conflicting needs and desires. Sensitive resources had to be protected, and the use of cleanup techniques which were themselves capable of causing environmental harm had to be minimized. Even so, it remained desirable that shorelines be cleaned as thoroughly as practicable (with obvious political benefits to achieving "highly visible" results). At the same time, the cleanup also had to move quickly if all heavily oiled

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172. Ibid.

shorelines were to be stabilized before the projected end of the cleanup season. The net result in 1989 was that, with the resource sensitivities that constrained the cleanup effort serving as a constant backdrop, increasing reliance was placed on the use of hot-washing and on moving quickly to assure that all shorelines could receive at least an initial treatment before 15 September.

While the news media played on themes of oiled wildlife and the enormity of the shoreline cleanup effort (and on the theme of the ineffectuality of much of it as well), there were continuing behind-the-scenes concerns about whether Exxon would remain committed to the cleanup effort. There were concerted efforts, both in Alaska and in Washington, D.C., to assure that Exxon would fulfill the commitments for workers and materiel that it had already made. Efforts to produce a database (CAMEO Valdez) that would render the FOSC independent of the "data wars" taking place between the state and Exxon took on both practical and political salience.

Although Exxon had by mid-August achieved a level of effort on a par with what had been projected, the winding down of the cleanup late in the summer brought renewed concerns on the part of state officials about the strength of Exxon's resolve. The organization of winter cleanup programs under state sponsorship, condoned by neither Exxon nor the FOSC, served nevertheless to keep attention focused on the state's expectations for continuation of the cleanup in 1990.

By the end of the year, the early results of winter monitoring efforts were laying the groundwork for disputes to come. Where federal officials saw justification for a shift to a less intrusive cleanup effort aimed at complementing nature's work, the state saw the presence of subsurface oil in many areas as evidence that a more concerted attack on the many remaining problem areas would be necessary in 1990. Nevertheless, all sides seemed to agree that winter storms were doing much to push the cleanup process considerably beyond where it had been when Exxon suspended its operations in mid-September.



## CHAPTER 7. SHORELINE CLEANUP IN 1990

### OVERVIEW OF SHORELINE CLEANUP IN 1990

The message coming in from the field in the early winter of 1989, that winter storms were continuing and in some cases accelerating the shoreline cleanup which Exxon had suspended in mid-September, was strongly reinforced by additional data gathered from the field in the new year. This reinforced also the message that the FOSC had “telegraphed” to the Alaska Regional Response Team (RRT) in mid-December of 1989, that the 1990 shoreline cleanup should be less intrusive than that in 1989, and tailored to complement the job that “mother nature” was doing.<sup>1</sup> An orchestrated campaign in the winter and early spring of 1990 worked to deliver that message through a variety of channels and fora. While dissenters remained, it was a message that found support, initially at least, in the National Oceanic and Atmospheric Administration (NOAA), the Coast Guard, Exxon, Alaska Department of Environmental Conservation (ADEC), and the U.S. Environmental Protection Agency (EPA).

The result was greater reliance in 1990 on bioremediation and manual “type A” cleanups than had been the case in 1989. Where circumstances were deemed to warrant, highly intrusive cleanups involving the use of heavy equipment were still employed, but the theme of tying cleanup decisions to consideration of “net environmental benefit” also became prominent in 1990, generally limiting such efforts to particular circumstances. The entire shoreline cleanup effort in 1990 was only about 10 percent of the size of the effort which was expended in 1989.

While the luxury of a winter in which to plan a cleanup strategy on the basis of a growing database on conditions in the field may have promoted a level of harmony on overall objectives that was absent in 1989, 1990 proved to be marked also by episodic but nevertheless serious conflict over many of the details. Battles over Corexit (explored in chapter 9, “Chemical Shoreline Cleaners”), the “rock washer,” and the use of “storm berm relocation” in the cleanup, particularly on an environmentally sensitive shoreline in the Barren Islands (US-10), proved to be especially vexing (figure 7.1).<sup>2</sup>

In 1990, the Interagency Shoreline Cleanup Committee’s (ISCC) role in providing subdivision-by-subdivision treatment recommendations to the FOSC was subsumed by a new group, the Technical Advisory Group (TAG). While the creation of TAG clearly contributed to facilitation of the decision making process, it did so at the cost that many who had grown comfortable with the roles they played in 1989 suddenly felt “out of the loop.”

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1. Comdr. D. D. Rome (RRT), memorandum to RRT members, 12 Dec. 1989, no. W254, FOSC Exxon Valdez Archive.

2. Both the rock washer and the controversy over the cleanup of US-10 are explored in chapter 12, “Other Shoreline Cleanup Issues.”

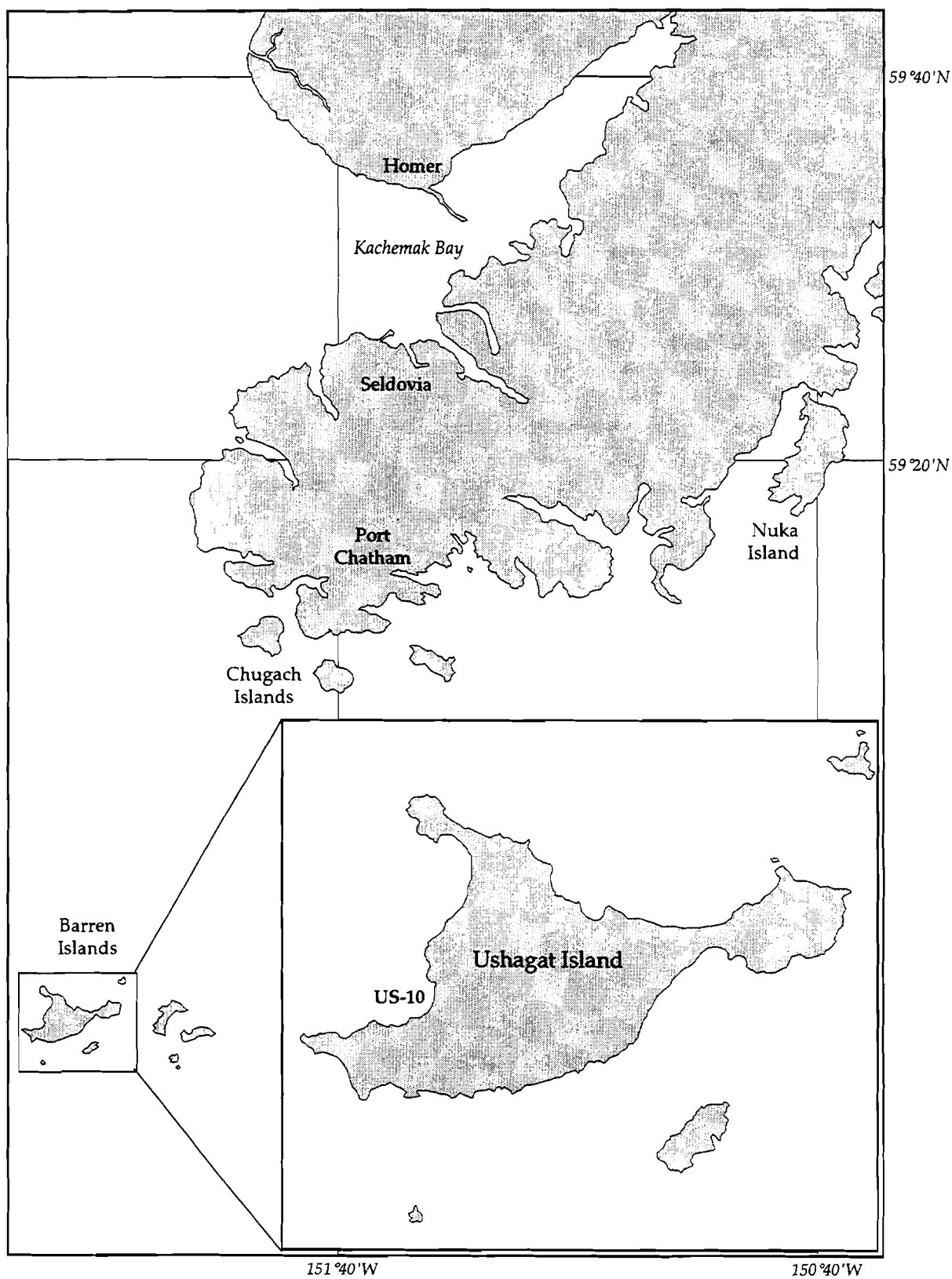


Figure 7.1. Approximate location of segment US-10 on Ushagat Island.

An ongoing struggle for control of the cleanup (or of particular aspects of it) appeared to underlie much of the conflict in 1990, perhaps nowhere better illustrated than in the initiative by ADEC Commissioner Dennis Kelso, in late July, to impose a numeric standard on sediment hydrocarbon concentrations, to be achieved by manual and mechanical means before bioremediation could be applied for “final” treatment. While agreeing in principle that the use of intrusive cleanup techniques should be tied to “net benefit” considerations, the state came increasingly to feel that built-in biases were leading to underutilization of both manual and mechanical removal of oiled debris, and too-ready an application of bioremediation. This chapter deals with the cleanup in 1990, focusing on how its underlying philosophy developed and evolved, and on how ongoing conflict served to make 1990 a year full of contention, even as the cleanup itself reached a very high level of efficiency.

#### BUILDING A CONSENSUS ON THE 1990 SHORELINE CLEANUP STRATEGY

Two workshops on shoreline cleanup technology, the first, sponsored by NOAA and held in Anchorage in late November 1989, the second, sponsored by Exxon and held in Newport Beach, California in early February 1990, proved instrumental in defining and rationalizing the approach to shoreline cleanup that would be taken in 1990 and thereafter.<sup>3</sup> Both were aimed at achieving consensus on the efficacy of particular treatment approaches and the conditions of their use. The Newport Beach workshop proved especially significant because of the three-page “consensus document,” agreed to by all the participant agencies, that emerged.<sup>4</sup>

The workshop participants agreed that there had been significant surface oil (figure 7.2) removal in exposed areas over the fall and winter, and that subsurface oil in these areas was also decreasing. Significant oil penetration (thirty to sixty centimeters) had occurred on some of these same shorelines, however. Sheltered areas had more limited oil penetration, but also more limited amounts of surface cleaning by fall-winter storms.<sup>5</sup> Additional agreements reached about the utility and appropriate use of bioremediation served to enhance considerably its place among available treatment technologies.<sup>6</sup>

More important in terms of its impact on the overall philosophy that would guide the cleanup in 1990, however, was the consensus document’s final page of conclusions:

- Natural cleanup is proceeding in many areas.
- Continued natural cleaning and uninterrupted biological activity are the preferred cleanup options for the majority of the impacted shorelines.
- In general, activities during the summer should serve to minimize or mitigate damage to public health, welfare and environment.

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3. NOAA, “Exxon Valdez Cleanup Technology Workshop, November 28-30, 1989,” 2 Mar. 1990, no. W473; and Exxon, “Shoreline Cleanup Technology Workshop” (handouts, 20 Feb. 1990), no. W427, FOSC Exxon Valdez Archive.

4. H. Jahns (Exxon), letter to S. Provant (ADEC), 16 Feb. 1990, no. W426, FOSC Exxon Valdez Archive. The workshop was attended by representatives of the Coast Guard, ADEC, EPA, NOAA, and Exxon.

5. *Ibid.*

6. *Ibid.* This point is discussed in more detail in chapter 10, “Bioremediation.”

- Active cleanup techniques may be considered to enhance natural processes in some areas, depending on site-specific cleanup objectives and tradeoffs.
- Locations where net benefits could justify further cleanup activities are likely to be limited to sheltered low-energy areas of high recreational use or ecological importance, where tarry residue persists on the surface.
- Non-intrusive, low-impact techniques (manual pickup, snare booms, tarmat breakup or removal, and bioremediation) are the preferred methods when active cleanup is deemed necessary to accelerate natural cleansing.
- Tilling techniques may be considered where less intrusive techniques are found to be ineffective. Their applicability appears limited.
- High-impact techniques, such as washing or excavation may be considered on a site-specific basis depending on shoreline type, but appear to have limited applicability.<sup>7</sup>

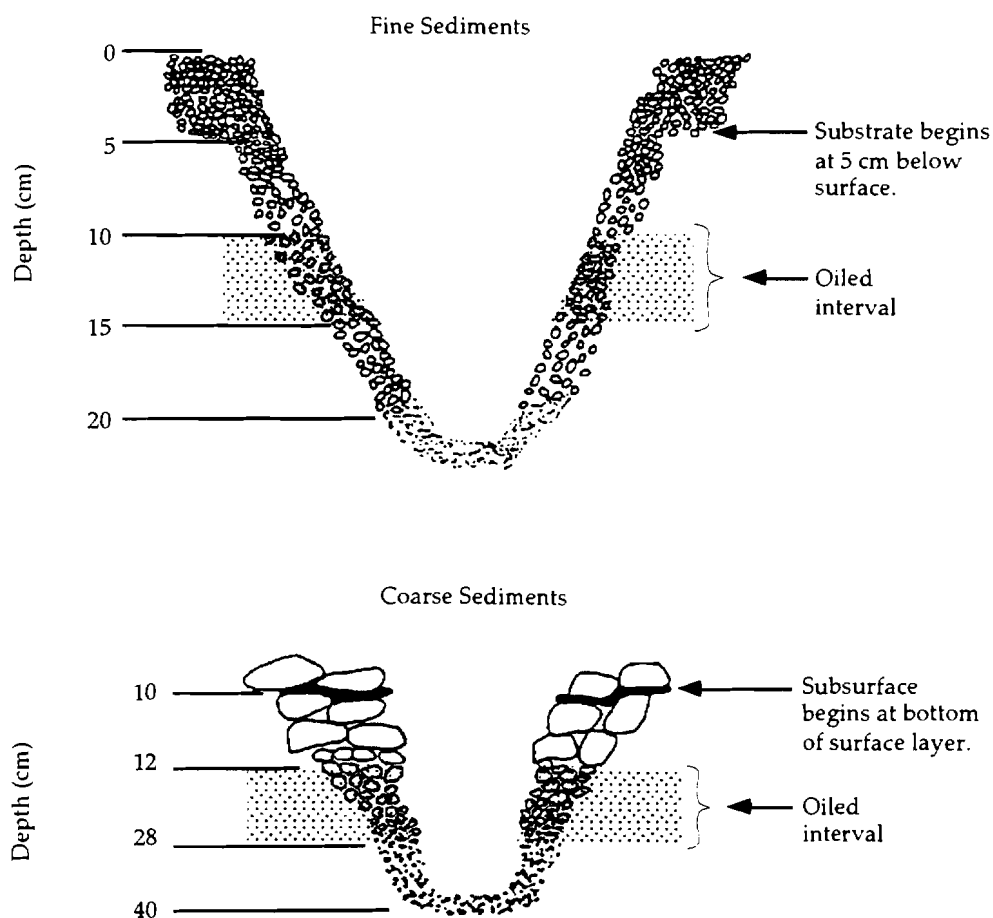


Figure 7.2 Schematic representation of oil percolating into subsurface sediments.

The fuller expression of the philosophy embodied in these findings is to be found in a 25 January NOAA recommendation to the FOSC on the 1990 cleanup. The theme of

7. Ibid.

the document, and of the accord struck in the conference which followed its official release, was well laid out in its preamble:

In all major oil spills the question "How clean is clean?" has proven difficult to answer; seldom can a simplistic endpoint be specified that will meet all resource management objectives. Despite the apparent desirability of intervening mechanically or chemically to rid the environment of all traces of oil pollution, the actions required to reach the literal definition of "clean" often in themselves are capable of inflicting more injury to the environment than most in society would find acceptable.<sup>8</sup>

The NOAA document went on to recommend that no greater stress be placed on the environment than necessary to achieve the level of cleanup desired in particular situations. This generally argued for the less intrusive cleanup approaches and for an "extremely conservative" approach in the use of chemical beach cleaners. Among the few cases in which NOAA was willing to argue for aggressive cleanup were those in which subsurface oil deposits posed threats to human health through their potential impact on subsistence shellfish harvest. Mechanical tilling was also argued for in cases where subsurface anaerobic conditions were impeding the degradation of subsurface oil.<sup>9</sup>

Language from NOAA's 25 January recommendation was widely circulated in advance of its release, as NOAA undertook to seek consensus on the document's basic themes. Similar themes appeared in a variety of official correspondence at about this time. The same basic thrust found expression in the RRT chair's mid-December message to the RRT member agencies, in a reinforcing memorandum sent on 2 January,<sup>10</sup> and in Admiral Paul Yost's 15 February "instructions" to the FOSC for the conduct of the 1990 cleanup.<sup>11</sup> A draft "goals and objectives" document transmitted from the commandant's office to the FOSC included the goal of ensuring "that in our efforts to make shorelines visually or aesthetically clean that we are not doing greater long term harm to the environment and that the use of resources is responsibly weighed against the benefit."<sup>12</sup>

#### WINTER AND SPRING SHORELINE SURVEYS

The details of the 1990 shoreline cleanup effort depended on the shoreline surveys agreed to in the preceding fall, but whose actual execution was timed to follow the major reworking of oiled shorelines that would be wrought by winter storms.

Starting in late January, and extending through mid-February, Exxon conducted its Fast Assessment Shoreline Survey Team (FASST) surveys.<sup>13</sup> Their purpose was to provide

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8. NOAA, "NOAA Recommendation to the Federal On-Scene Coordinator for 1990 Cleanup of the Exxon Valdez Oil Spill," 25 Jan. 1990, no. W259, FOSC Exxon Valdez Archive. Attachment 1 to this document indicates that NOAA had undertaken to have it reviewed by the principal players before it became an official recommendation to the FOSC. Six pages of reviewers' comments are attached.

9. *Ibid.*, 6-7.

10. Capt. D. Bodron, memorandum to RRT members, 2 Jan. 1990, no. W272, FOSC Exxon Valdez Archive.

11. Commandant, memorandum to FOSC, 15 Feb. 1990, no. W441, FOSC Exxon Valdez Archive.

12. USCG, "Exxon Valdez Goals and Objectives," 8 Jan. 1990, no. W290, FOSC Exxon Valdez Archive. The draft document's preparers were also gearing their planning towards a firm termination of the response on 15 September, with a transfer of the FOSC function to Coast Guard District 17, headquartered in Juneau.

13. A. D. Carpenter (Exxon), letter to Capt. D. Zawadzki, 25 Jan. 1990, no. W432, FOSC Exxon Valdez Archive.



a rapid assessment at specific sites that would be surveyed more thoroughly in April, in partnership with ADEC and the Coast Guard. Six survey teams covered a total of 118 miles of shoreline.<sup>14</sup> The general assessment reported by Exxon's Andy Teal at the public Operations Steering Committee meeting in February was that conditions had much improved.

The second, and much more comprehensive, assessment was done in April and early May. The surveys were conducted in two phases, coordinated so that operations could get underway in early May while the second phase of the survey continued.<sup>15</sup> The Spring Shoreline Assessment Team (SSAT) findings would become the primary basis for the actual shoreline work to be done in the coming summer. A total of twenty five-to six-member teams would be fielded, sixteen of them in Prince William Sound, the remainder in western Alaska.<sup>16</sup> Each team had an intertidal ecologist and a geomorphologist, and land manager representatives were strongly encouraged to participate as well.<sup>17</sup>

Survey site selections were based on ADEC's fall assessments, supplemented by Exxon FASST surveys and information from other agencies.<sup>18</sup> The survey teams visited over 1,217 miles of shoreline. A total of 1,035 subdivisions were surveyed, resulting in treatment recommendations for 598 of them, with the remaining 437 given "no treatment required" (NTR) recommendations by SSAT teams.<sup>19</sup>

#### VOLUNTEER AND NON-EXXON CLEANUP PROGRAMS

Many volunteer or community-based winter cleanup programs had been proposed in 1989 as "replacements" for Exxon's efforts once its response program shut down for the winter in September 1989.<sup>20</sup> Many of these programs had suffered startup problems, but were nevertheless ready to get underway as spring approached in 1990.

Nancy Lethcoe, of the Prince William Sound Conservation Alliance (PWSCA) and a Prince William Sound Interagency Shoreline Cleanup Committee (ISCC) representative, had proposed a volunteer citizens' tarball pickup program, to be coordinated through the ISCC, in mid-July of 1989.<sup>21</sup> Vice Admiral Clyde E. Robbins was encouraging of such volunteer efforts, provided they were properly coordinated

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14. USCG, "Summary of Meeting" (summary of Operations Steering Committee meeting, 20 Feb. 1990), no. W545, FOSC Exxon Valdez Archive.

15. Exxon, "Spring Shoreline Assessment Program" (Technical Advisory Group meeting highlights, 12 Feb. 1990), no. W464, FOSC Exxon Valdez Archive.

16. USCG, "Summary of Meeting" (summary of Operations Steering Committee meeting, 20 Mar. 1990), no. W606, FOSC Exxon Valdez Archive.

17. FOSC, memorandum to Capt. D. Bodron, 2 Mar. 1990, no. W581, FOSC Exxon Valdez Archive. Land manager participation was not always a simple matter. For example, while the Chenega Corporation welcomed the chance to participate, it felt it necessary to inform the FOSC in writing that Chenega SSAT representatives were not authorized to make decisions that bound the corporation board of directors (C. Totemoff [Chenega Village Corporation], letter to Rear Adm. D. E. Ciancaglini, 28 Mar. 1990, no. W782, FOSC Exxon Valdez Archive).

18. Exxon, "Exxon Valdez 1990 Spring Shoreline Assessment Team (SSAT) Program Overview," 20 Mar. 1990, no. W489, FOSC Exxon Valdez Archive. Alaska Department of Environmental Conservation OSC Steve Provant expressed concerns that while ADEC sites were included, they had not been accorded the same priorities that ADEC had assigned them (S. Provant [ADEC], letter to A. Teal [Exxon], 14 Mar. 1990, no. W942, FOSC Exxon Valdez Archive).

19. NOAA/FOSC, "Cameo Report," 19 Aug. 1990, no. W1963, FOSC Exxon Valdez Archive.

20. The FOSC and Exxon positions on these programs are discussed in chapter 6, "Shoreline Cleanup in 1989."

21. N. Lethcoe (PWSCA), letter to S. Christopherson (ISCC), 13 July 1989, no. C1036, FOSC Exxon Valdez Archive.

and stayed focused on lightly oiled beaches, as he saw, "It is in everyone's interest to get as much of the oil as possible cleanup up this summer."<sup>22</sup> He asked Exxon to provide collection sites in Valdez, Cordova, and Whittier for the wastes collected by these volunteers.

Rear Admiral David E. Ciancaglini, acting in relief of Vice Admiral Robbins in mid-August, provided official sanction to volunteer cleanup efforts, subject to a number of conditions. Volunteer cleanup crews would be permitted to operate only on a case-by-case approval basis and when sponsored by a recognized local organization. The ISCC would coordinate the volunteers and develop procedures for volunteer groups to follow. The PWSCA was made responsible for training and assuring that only oily wastes were collected. The Coast Guard would not assume liability or provide for medical contingencies.<sup>23</sup>

Volunteer crews were soon deployed to a number of locations. Volunteer winter-spring cleanups of a number of shoreline segments on Green Island and in the Naked Island group were recommended for approval by the Prince William Sound ISCC on 30 January.<sup>24</sup> Exxon, however, felt compelled to reiterate its position on volunteer cleanup programs, that it did not support them and felt they were ill-advised during the stormy winter season.<sup>25</sup> The company agreed that it would provide waste removal if asked to do so by the FOSC.

The state of Alaska's announcement that it would support local cleanup efforts with financial resources led to a number of proposals from communities to conduct cleanup programs in the spring. The PWSCA became the contractor for a program developed by the city of Valdez under the state winter cleanup program.<sup>26</sup> The Chenega Village Corporation soon developed a plan for its own winter "type A" cleanup.<sup>27</sup>

The efforts of some communities in the region to engage in their own cleanup efforts sometimes provoked local conflict, particularly between Native and non-Native communities, as well as considerable concern from local resource management agencies. Plans developed by the city of Cordova were opposed by the Eyak

22. FOSC, memorandum to Interagency Shoreline Cleanup Committee, 23 July 1989, no. C1099, FOSC Exxon Valdez Archive. Regulatory difficulties which an FOSC must face in making use of volunteers are described in chapter 14, "Wildlife Rescue and Rehabilitation."

23. Rear Adm. D. E. Ciancaglini, letter to K. McCarty (PWSCA), 13 Aug. 1989, no. C1639, FOSC Exxon Valdez Archive. The PWSCA was also required to obtain land use permits from ADNOR before volunteers could "treat" shorelines through debris pickup (Rear Adm. D. E. Ciancaglini, letter to N. Lethcoe [PWSCA], 14 Feb. 1990, no. W424, FOSC Exxon Valdez Archive). If DOI lands were involved, then permits were required from that agency (Comdr. W. Griswold, note from P. Gates [DOI], 14 Mar. 1990, no. W652, FOSC Exxon Valdez Archive).

24. J. Whitney (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 30 Jan. 1989, no. W324, FOSC Exxon Valdez Archive.

25. Exxon, "Volunteer Programs" (summary of Exxon's position, 31 Jan. 1990), no. W449; and M. Taylor (Exxon), letter to N. Lethcoe (PWSCA), 1 Feb. 1990, no. W344, FOSC Exxon Valdez Archive.

26. J. Whitney (NOAA), memorandum to FOSC, 5 Mar. 1990, no. W570, FOSC Exxon Valdez Archive.

27. J. Whitney (NOAA), memorandum to FOSC, 9 Mar. 1990, no. W838, FOSC Exxon Valdez Archive. This plan elicited concerns from NOAA due to the presence of study plots in areas where the cleanup would take place. Rear Adm. Ciancaglini registered concerns with state OSC Steve Provant on this and several other grounds, including the lack of waste management plans and possible interference with eagle nests (Rear Adm. D. E. Ciancaglini, letter to S. Provant [ADEC], 15 Mar. 1990, no. W841, FOSC Exxon Valdez Archive).

Corporation, a Native village corporation headquartered there, as well as by Exxon.<sup>28</sup> The Kodiak ISCC produced a lengthy list of the concerns its member agencies had over the cleanup plan developed by the Kodiak Borough. These included the possibility that the local cleanup would mobilize oil just as the herring spawning season was beginning, and that it would endanger important cultural resources in the area.<sup>29</sup>

The Chugach Alaska Corporation, the major landowner in Prince William Sound, was especially adamant about prohibiting the uncontrolled access to its lands that it saw in local cleanup programs like the one sponsored by the city of Cordova. It asked that a general policy of denying upland access to non-Exxon cleanup crews be instituted, and it denied access to all lands it owned to non-Exxon crews, out of concern for cultural artifacts.<sup>30</sup> Concern for possible impacts on archaeological sites led the state historic preservation officer (SHPO) to deny access by volunteers in the PWSCA-sponsored program to any lands on which archaeological surveys had not yet been conducted.<sup>31</sup>

Though highly constrained as a result of all the restrictions that resulted from these concerns, many locally based cleanup efforts were soon underway, supported with funding from the state.

#### THE TECHNICAL ADVISORY GROUP (TAG)

While a high degree of accord had been developing among the responding agencies over the winter, there remained significant philosophical differences which, if they could not be ironed out in advance, would have to be worked through on a case-by-case basis as individual shoreline segments and subdivisions were considered for treatment.<sup>32</sup>

The “working through” in 1990 was to be done by a new standing FOSC advisory committee, the Technical Advisory Group (TAG), consisting of ADEC, the Coast Guard, NOAA, and Exxon. Its emergence in early February 1990 left some in agencies and non-governmental organizations which had shared this role in 1989, through their

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28. S. Rehnberg (The Eyak Corp.), letter to Rear Adm. D. E. Ciancaglini, 12 Mar. 1990, no. W628; and O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 15 Feb. 1990, no. W459, FOSC Exxon Valdez Archive.

29. Comdr. A. T. Smith, letter to J. Selby (mayor, Kodiak Island Borough), 20 Mar. 1990, no. W500; and W. Coleman (Kodiak Oil Spill Response Office), memorandum to KISCC, 25 Mar. 1990, no. W772, FOSC Exxon Valdez Archive.

30. J. S. Black and P. Y. Park (Chugach Alaska Corporation), letter to R. Van Brocklin (mayor, Cordova), 5 Apr. 1990, no. W780; and L. Johnson (Chugach Alaska Corporation), letter to G. Hayden (ADEC), 10 Apr. 1990, no. W1620, FOSC Exxon Valdez Archive.

31. N. Lethcoe (PWSCA), letter to Rear Adm. D. E. Ciancaglini, 11 Apr. 1990, no. W859, FOSC Exxon Valdez Archive.

32. For example, the state reacted very positively to the Coast Guard “goals and objectives” statement noted earlier, but wanted to reaffirm its position that subsurface oil was now the most significant remaining problem. In state OSC Steve Provant’s view, this meant that very aggressive cleanup would still have to be used in some cases to remove subsurface oiling, even at the risk of additional (but temporary) injury to the environment (S. Provant [ADEC], letter to Rear Adm. D. E. Ciancaglini, 27 Jan. 1990, no. W310, FOSC Exxon Valdez Archive). A second letter from Mr. Provant details a number of more specific differences with NOAA’s positions (S. Provant, letter to Rear Adm. D. E. Ciancaglini, 15 Feb. 1990, no. W421, FOSC Exxon Valdez Archive). Rear Adm. Ciancaglini likewise responded in detail (Rear Adm. D. E. Ciancaglini, letter to S. Provant, 7 Mar. 1990, no. W571, FOSC Exxon Valdez Archive). Another problem was that of “calibrating eyeballs.” Exxon reported in February 1990 that five overflights in which both Coast Guard and ADEC monitors were aboard resulted in a total of forty sheen reports from ADEC monitors while Coast Guard monitors reported just seventeen (R. Gomez [Exxon], memorandum to C. Loggie [Exxon], 5 Feb. 1990, no. W433, FOSC Exxon Valdez Archive).

participation in the ISCCs, with feelings that they had been “cut out” of the decision process.<sup>33</sup>

The Technical Advisory Group’s role was initially centered on joint agency development and advice on SSAT. Weekly meetings were envisioned.<sup>34</sup> By summer, however, TAG had effectively replaced the ISCCs in the shoreline treatment decision sequence (figure 7.3). TAG was soon meeting seven days a week, and meetings often filled the entire day.

Environmental priorities and constraints developed by the Resource Advisory Group (RAG) were combined with Shoreline Assessment Team (SAT) recommendations to produce site-specific cleanup recommendations for TAG consideration. Consultation with the SHPO with respect to archaeological constraints was sought (SHPO sign off was required) and land managers were also consulted. The Technical Advisory Group would then either make a no treatment recommendation (NTR) or pass a specific plan for treatment on to the FOSC for approval.<sup>35</sup>

Because of land manager concerns, a process evolved that gave land managers two entry points to the system. TAG requested reviews from the State Technical Advisory Group (STAG), a state parallel group which included land managers, before making its own recommendations.<sup>36</sup> Following the TAG recommendation, land managers were given twenty-four hours for any additional comments to the FOSC.

Perhaps the most controversial aspect of TAG was the fact that, unlike the ISCC meetings of 1989, TAG meetings were closed to the general public and the press. Ernie Piper, then special assistant to the governor, protested that the TAG format constituted a violation of the state’s “sunshine” laws.<sup>37</sup> The implication was that state representatives couldn’t participate in such meetings.<sup>38</sup> The Coast Guard’s position was that, since TAG was operating at the behest of the federal government and was part of the operations decision-making apparatus, neither state nor federal sunshine laws

33. ADF&G representatives felt that the state in particular was under-represented as it now had only a single vote (M. Kuwada [ADF&G], interview by Lt. Comdr. R. Gaunt, A. van Emmerik [FOSC staff], and Dr. T. Leschine [FOSC staff], Anchorage, 27 May 1992, no. F675, tape, FOSC Exxon Valdez Archive). Native corporation land managers felt that TAG’s decision flow precluded their being able to initiate recommendations for cleanup, leaving them in a position of only being able to react to plans developed by others (P. Norman [Port Graham Corp.] and M. Gordaoff [Tatitlek Corp.], letter to Rear Adm. D. E. Ciancaglini, 8 Mar. 1990, no. W516, FOSC Exxon Valdez Archive). Exxon’s Otto Harrison didn’t feel that TAG had facilitated shoreline decision making as much as advertised, as many voices were still heard at TAG meetings and deliberations were extensive (O. Harrison [Exxon], interview by Dr. T. Leschine [FOSC staff], A. van Emmerik [FOSC staff], and Lt. Comdr. R. Gaunt, Anchorage, 24 June 1992, no. F670, tape, FOSC Exxon Valdez Archive).

34. Exxon, “Spring Shoreline Assessment Program” (Technical Advisory Group meeting highlights, 12 Feb. 1990).

35. USCG, “FOSC Exxon Valdez Summer-90 Plan,” no. W770, FOSC Exxon Valdez Archive. An examination of the shoreline evaluation forms used to summarize information on specific segments as they passed through the decision process shows that there was considerable attention to detail as information was prepared for TAG and the FOSC (Exxon, “Shoreline Evaluation,” 21 Mar. 1990, no. W734, FOSC Exxon Valdez Archive).

36. Capt. D. Zawadzki, letter to M. Chittick (Chugach Alaska Corporation), 5 Apr. 1990, no. W804; and Capt. D. Zawadzki, letter to J. S. Black (Chugach Alaska Corporation), 14 Apr. 1990, no. W882, FOSC Exxon Valdez Archive. A revised decision chart dated 31 Mar. 1990 shows these changes (Exxon, “Exxon Valdez Summer 1990 Shoreline Treatment Decision Chart,” 31 Mar. 1990, no. W804, FOSC Exxon Valdez Archive). The cultural resources advisory group to TAG became known as CTAG.

37. E. Piper (ADEC), letter to O. Harrison (Exxon) and Rear Adm. D. E. Ciancaglini, 16 Apr. 1990, no. W1134, FOSC Exxon Valdez Archive.

38. C. Wohlforth, “Kelso: State Won’t Boycott Closed Oil-Spill Meetings,” *Anchorage Daily News*, 18 Apr. 1990, sec. B. Mr. Kelso said that on balance it was more in the state interest to attend the meetings. This is discussed further in chapter 21, “Public Affairs and Protocol.”

applied.<sup>39</sup> The issue led to considerable agitation, leading at one point to accusations that National Park Service (NPS) and U.S. Fish and Wildlife Service (FWS) personnel had “end run” their reporting chain to draw the Sierra Club Legal Defense Fund into the dispute over the makeup and operating rules of TAG.<sup>40</sup>

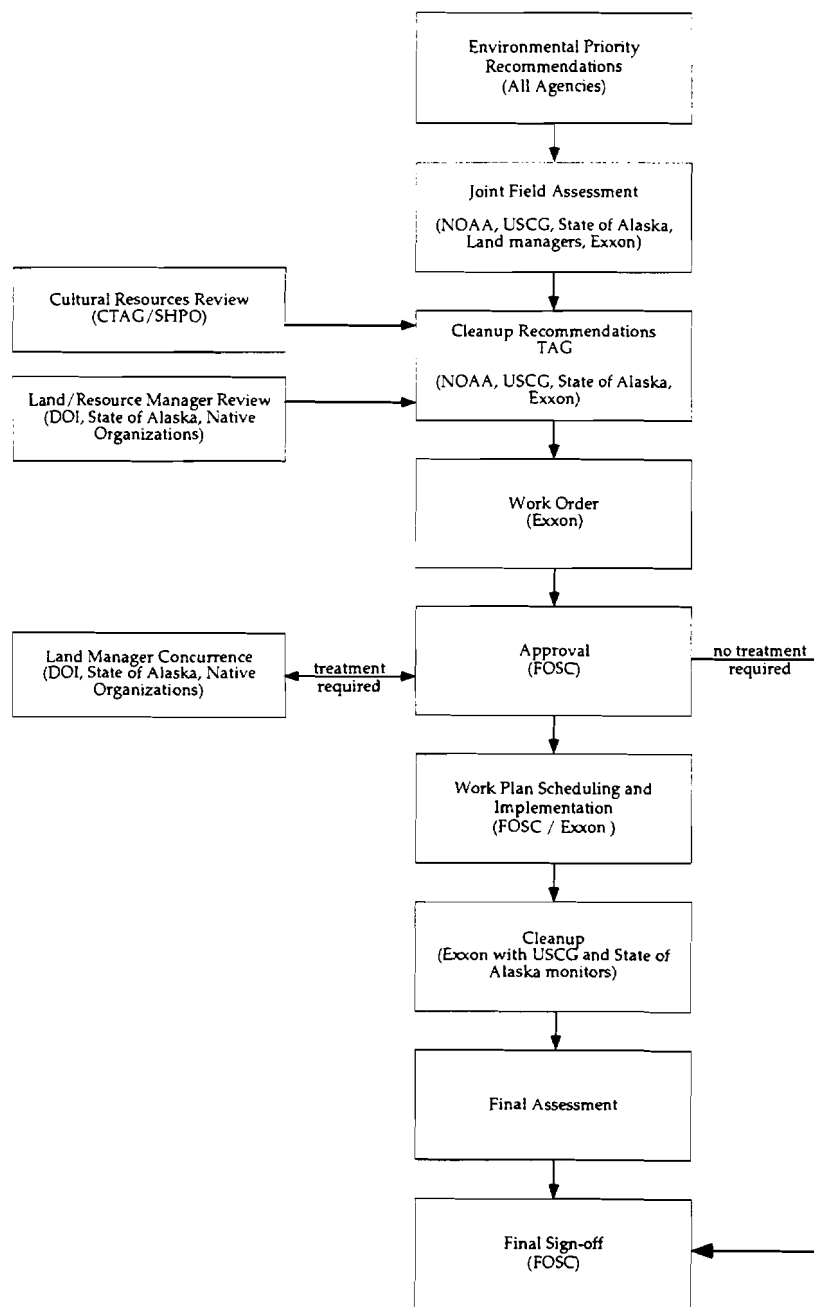


Figure 7.3. Exxon Valdez Shoreline Cleanup Flow Chart (summer 1990).

Source: USCG, “Organization and Responsibilities,” 30 April 1989, no. C644, FOSC Exxon Valdez Archive.

39. Capt. M. L. Dorsey, memorandum to chief (MEP branch), 12 Apr. 1990, no. W985, FOSC Exxon Valdez Archive.

40. Rear Adm. D. E. Ciancaglini, letter to P. Gates (DOI), 21 Apr. 1990, no. W861, FOSC Exxon Valdez Archive.

Sierra Club attorneys continued to argue in 1991 that TAG was an advisory committee subject to the open meeting requirements of the Federal Advisory Committee Act (5 U.S.C.A., App. secs. 1–14).<sup>41</sup>

#### PLANNING FOR THE SUMMER SHORELINE CLEANUP

Rear Admiral Ciancaglini had asked Exxon to prepare a general plan to guide its 1990 cleanup by 15 March. He also asked Exxon to coordinate the joint SSAT surveys and, in the interests of continued cooperation in planning, to prepare the survey results in a way that would permit direct comparison with the conditions reported at the same sites by ADEC in its fall surveys.<sup>42</sup>

In western Alaska, the multi-agency advisory committees (MACs) underwent reorganization, forming what came to be known as the “super MAC,” operating out of Kenai Peninsula Borough. Rear Admiral Ciancaglini found this proposed combination of the Homer and Seward MACs as beneficial to simplifying the flow of information to the FOSC.<sup>43</sup> The Seward MAC, however, expressed “surprise” at this attempt to consolidate the MAC operations, preferring to remain independent.<sup>44</sup> Rear Admiral Ciancaglini decided that in the interests of harmony in the overall MAC structure, the Seward Resource Multi-Agency Advisory Committee (RMAC) could continue to function independently if it so desired, an organizational arrangement which in his view did not substantively affect the relationship he had with either group.<sup>45</sup>

By late February, the Prince William Sound ISCC had finalized its list of environmental constraints and priorities for the 1990 cleanup and transmitted them to Exxon for inclusion in their plan.<sup>46</sup> The general guidelines were accompanied in some cases by very site- and time-specific periods when operations were restricted, particularly with respect to salmon hatcheries and fisheries. The Seward MAC likewise transmitted through the Seward Incident Command Post (ICP) a detailing of the sensitive environmental, recreational and subsistence resources associated with each oiled shoreline segment in the Seward zone.<sup>47</sup>

Exxon released its “1990 General Plan” on 15 March. The plan was widely distributed and generated considerable comment from both governmental and non-governmental organizations.<sup>48</sup> The National Oceanic and Atmospheric Administration found the

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41. T. Waldo (Sierra Club Legal Defense Fund), letter to Rear Adm. D. E. Ciancaglini, 10 Feb. 1991, no. F624, FOSC Exxon Valdez Archive.

42. Rear Adm. D. E. Ciancaglini, letter to S. Provant (ADEC), and O. Harrison (Exxon), 20 Feb. 1990, no. W425, FOSC Exxon Valdez Archive.

43. Rear Adm. D. E. Ciancaglini, letter to D. Gilman (mayor, Kenai Peninsula Borough), 20 Feb. 1990, no. W461, FOSC Exxon Valdez Archive.

44. A. Castellina (Seward MAC), letter to D. Gilman (mayor, Kenai Peninsula Borough), 5 Mar. 1990, no. W555; and A. Castellina, letter to Rear Adm. D. E. Ciancaglini, 5 Mar. 1990, no. W554, FOSC Exxon Valdez Archive.

45. Rear Adm. D. E. Ciancaglini, letter to A. Castellina (Seward MAC), 15 Mar. 1990, no. W801, FOSC Exxon Valdez Archive. Anne Castellina, who had chaired the Seward MAC since its inception, remained active with the RMAC. Anne Castellina was superintendent of Kenai Fjords National Park.

46. J. Whitney (NOAA), facsimile transmission to PWS ISCC members, 28 Feb. 1990, no. W456, FOSC Exxon Valdez Archive.

47. ICP Seward, facsimile transmission to FOSC, 2 Mar. 1990, no. W470, FOSC Exxon Valdez Archive.

48. Nearly one dozen detailed critiques are to be found in the FOSC Archive.

plan to be largely consistent with its 25 January recommendations.<sup>49</sup> The RRT disagreed with Exxon that tarmats, once broken up, should be scattered, preferring removal instead.<sup>50</sup> The Alaska Department of Natural Resources (ADNR) disagreed with Exxon's discouraging of intrusive cleanup techniques and felt that land managers, and not Exxon, should decide when their use was warranted.<sup>51</sup> U.S. Department of the Interior (DOI) agencies found much to criticize in the plan, offering a five page point-by-point critique.<sup>52</sup> The U.S. Environmental Protection Agency (EPA), while generally in concord with the plan, expressed serious doubts about Exxon's plans for seeking approval of the chemical shoreline cleaner Corexit, a harbinger perhaps of the battles to come over Corexit approval.<sup>53</sup>

Alaska Department of Environmental Conservation Commissioner Dennis Kelso offered a lengthy critique of the plan that was largely philosophical in nature.<sup>54</sup> He felt Exxon was focused too much on oil removal and not enough on restoration and the "long term" health of the resources affected by the spill. He aligned himself with ADNR in suggesting that "heavy digging and cleaning," though likely disruptive in the short run, could be justified if it removed a longer term threat to subsistence or fishery resources. He also argued that the response should conform to Alaska statutes and regulatory standards, stating that the commandant had said that decisions would be made in "concert and consonance" with the state of Alaska. A more detailed point-by-point critique of the Exxon plan was later provided through state OSC Steve Provant.<sup>55</sup>

Rear Admiral Ciancaglini approved Exxon's plan, subject to several general conditions that were designed to assure that many of the amending conditions sought by others, if not explicitly included, were at least not ruled out.<sup>56</sup> For example, Exxon had to be prepared to use intrusive techniques when asked to do so, and might be asked to perform targeted habitat restoration if migratory waterfowl or marine mammals would otherwise be endangered.

Prior to Rear Admiral Ciancaglini's approving Exxon's plan and after the comments on it had been reviewed, Admiral Yost again traveled to Alaska to consult with the principals of Exxon and public agencies. He won assurances from Governor Cowper that bioremediation would be approved for use by the state before the scheduled 1 May start-up of operations, and assurances from Otto Harrison that Exxon would not resist treating shorelines the state identified that were not part of its current shoreline surveys.<sup>57</sup> Mr. Harrison estimated that the total workforce for 1990 would be about twelve hundred, counting both cleanup and support roles. Some of the discussion in

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49. J. Robinson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 21 Mar. 1990, no. W519, FOSC Exxon Valdez Archive.

50. Capt. D. Bodron, memorandum to FOSC, 20 Mar. 1990, no. W876, FOSC Exxon Valdez Archive.

51. B. Copeland (ADNR), memorandum to S. Provant (ADEC), 20 Mar. 1990, no. W1936, FOSC Exxon Valdez Archive.

52. P. Gates (DOI), letter to Capt. D. Bodron, 21 Mar. 1990, no. W1616, FOSC Exxon Valdez Archive.

53. A. Ewing (EPA), letter to Rear Adm. D. E. Ciancaglini, 22 Mar. 1990, no. W856, FOSC Exxon Valdez Archive. The Corexit controversy is covered in chapter 9, "Chemical Shoreline Cleaners."

54. D. Kelso (ADEC), letter to Rear Adm. D. E. Ciancaglini, 22 Mar. 1990, no. W720, FOSC Exxon Valdez Archive.

55. S. Provant (ADEC), letter to Rear Adm. D. E. Ciancaglini, 29 Mar. 1990, no. W971, FOSC Exxon Valdez Archive.

56. Adm. P. Yost, memorandum to the secretary [sic], 28 Mar. 1990, no. W836, FOSC Exxon Valdez Archive.

57. USCG, "ADM Paul Yost, Commandant U.S. Coast Guard and Mr. Otto Harrison, Exxon General Manager" (summary of meeting, 22 Mar. 1990), no. W873, FOSC Exxon Valdez Archive.

Admiral Yost's meeting with Mr. Harrison, and in a similar meeting with state OSC Steve Provant, suggests there was a linkage being made between the state's willingness to approve the "soft" bioremediation approach and Exxon's willingness to engage in aggressive "placer mining" techniques when the state felt their use was warranted.<sup>58</sup>

Field activities in April were dominated by the SSAT surveys. The Spring Shoreline Assessment Team suffered a few start-up problems, however, as for example when federal land manager members of the Kodiak ISCC felt that many sites they had nominated as "high priority" survey sites had not emerged as high priorities in the surveys being conducted by Exxon. Paul Gates, the DOI regional coordinator, was urged to coordinate future DOI agency survey requests so they would not come as surprises to Exxon or the FOSC.<sup>59</sup>

By 20 April, TAG had identified a few segments for early cleanup because of timing constraints that would affect their status in May.<sup>60</sup> By 22 April, SSAT had assessed and passed on to TAG 293 segments in Prince William Sound (with 176 segments remaining to be surveyed) and 87 in western Alaska (with 44 remaining).<sup>61</sup> The Kodiak ISCC was continuing to nominate additional sites which it felt should be included in the survey.<sup>62</sup>

Admiral Kime, as the new Coast Guard commandant selectee, visited the response area on 23 April, meeting with Randy Bayliss, the new state OSC.<sup>63</sup> The question of open meetings was a major topic of discussion, as was the state's role in the public policy decisions that were being made as the cleanup moved into its second year.

On 27 April, just days before the 1990 cleanup season was to begin, Exxon released its "1990 Work Program."<sup>64</sup> In response to comments made by the FOSC when he approved Exxon's "March Planning Document," the program included plans to work, in cooperation with the state, to evaluate "excavation/strip mining" oil removal techniques. Exxon announced that it would take the lead in developing what came to be known as the "rock washer." Bioremediation also was given a substantial role.

As with the "March Planning Document," Exxon's "1990 Work Program" drew considerable commentary on the details (or the lack thereof) from both public agencies and non-governmental organizations. U.S. Department of the Interior spokesman Paul Gates warned that the need to obtain the special use permits required for work on DOI agency lands had not been adequately accounted for. Nor did the plan describe the process of demobilization from shoreline segments.<sup>65</sup> A consortium of national and

58. USCG, "ADM Paul Yost, Commandant U.S. Coast Guard and Mr. Steve Provant, State of Alaska On Scene Coordinator" (summary of meeting, 22 Mar. 1990), no. W874, FOSC Exxon Valdez Archive.

59. Capt. D. Zawadzki, letter to P. Gates (DOI), 16 Apr. 1990, no. W1606, FOSC Exxon Valdez Archive.

60. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 20 Apr. 1990, no. F1609, FOSC Exxon Valdez Archive.

61. NOAA computer-generated graphics, 22 Apr. 1990, no. W747, FOSC Exxon Valdez Archive.

62. M. Goodwin (KISCC), letters to Rear Adm. D. E. Ciancaglini, 20 Apr. 1990, no. W903; and 23 Apr. 1990, no. W918, FOSC Exxon Valdez Archive.

63. USCG, "RADM William Kime, U.S. Coast Guard Commandant Selectee and Mr. Randy Bayliss, State of Alaska On Scene Coordinator" (summary of meeting, 23 Apr. 1990), no. W959, FOSC Exxon Valdez Archive.

64. Exxon, "1990 Work Program," 27 Apr. 1990, no. W763, FOSC Exxon Valdez Archive.

65. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 4 May 1990, no. W937, FOSC Exxon Valdez Archive.



regional environmental organizations wrote that the plan provided inadequate information on manpower projections.<sup>66</sup> State OSC Randy Bayliss wrote that the state could not give the plan final approval under state law because of deficiencies in addressing subsurface oil removal, the priority order of cleanups, and what he saw as a biased discussion of how Exxon would achieve a “net environmental benefit” in the cleanup:

Throughout the workplan, Exxon relies on manual cleanup as the primary technology to remove both surface and subsurface oil from the shoreline. A clear commitment must be made now to apply feasible technology to remove oil as thoroughly and as quickly as possible.<sup>67</sup>

Reviews of the plan by Coast Guard Headquarters (G-C and G-M) and the Office of the Secretary found the plan generally satisfactory. There was concern that waste disposal had the potential to again become a problem, as it had in 1989. Exxon’s intention to base use of intrusive cleanup techniques on net environmental benefit analysis was found to be intriguing, but in need of further development.<sup>68</sup>

Rear Admiral Ciancaglini approved the plan, subject to a number of conditions. He expected the cleanup to come to initial completion by 15 August so that there would be adequate time for a late summer assessment of all treated shoreline subdivisions, and he expected the cleanup in western Alaska to start no later than 1 June. Both the FOSC and Exxon remained committed to shoreline work only being conducted “using the least intrusive techniques to accomplish the job and produce a net environmental benefit.”<sup>69</sup>

#### SPRING-SUMMER OPERATIONS, 1990

As the cleanup was getting underway in earnest in early May, the FOSC reported that winter storms and tidal action had removed 70–80 percent of the remaining subsurface oil and 50–60 percent of the remaining surface oil.<sup>70</sup> Sixteen miles of shoreline showed significant subsurface oiling, of which one mile had oil buried to a depth of 2 feet or more, seven miles had oil to a depth of 1–2 feet, and eight miles had oil from a depth of 4–12 inches.<sup>71</sup> Among the oiled areas of particular concern were Morning Cove (Pye Islands), Sleepy Bay (Latouche Island), and Herring Bay, Point Helen, and south Bay of Isles (all on Knight Island) (figures 7.4 and 7.5).

Final SSAT survey results produced on 10 May made possible the comparison between the results of ADEC’s fall shoreline surveys and the just-completed spring survey that Rear Admiral Ciancaglini had requested (table 7.1).

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66. T. Waldo, E. Jorgensen (Sierra Club Legal Defense Fund), and M. Wenig (Trustees for Alaska), letter to Rear Adm. D. E. Ciancaglini, 4 May 1990, no. W932, FOSC Exxon Valdez Archive.

67. R. Bayliss (ADEC), letter to Rear Adm. D. E. Ciancaglini, 5 May 1990, no. W1068, FOSC Exxon Valdez Archive.

68. Executive assistant to the commandant, memorandum to FOSC, 9 May 1990, no. W1111, FOSC Exxon Valdez Archive.

69. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 11 May 1990, no. W928; and O. Harrison, letter to Rear Adm. D. E. Ciancaglini, 17 May 1990, no. W1920, FOSC Exxon Valdez Archive.

70. USCG, “Federal On Scene Coordinator Exxon Valdez 1990 Cleanup Status Report—May 1, 1990,” 1 May 1990, no. W1256, FOSC Exxon Valdez Archive.

71. *Ibid.* These were cumulative totals of highly discontinuous and relatively short stretches of oiled shoreline. Most remaining oiling, both surface and subsurface, was now very patchy in its distribution.

Biological observations accompanying SSAT survey results described considerable recruitment of intertidal organisms in areas where there had been considerable die-offs in the previous year, in some cases despite the obvious continued presence of oil.<sup>72</sup>

TABLE 7.1

Comparison of ADEC Fall 1989 Shoreline Surface Oiling Surveys with Spring 1990 SSAT Surveys  
(795.3 shoreline miles total)

Band Width	ADEC (Fall, 1989)	SSAT (Spring, 1990)
Wide	52.5	13.2
Moderate	49.8	32.4
Narrow	98.6	54.6
Very Light	265.4	190.8
None	329.0	504.3

Source: Exxon, "Spring 1990 Shoreline Assessment," 10 May 1990, no. W1267, FOSC Exxon Valdez Archive (figures only).

The onset of cleanup operations in 1990 was not without its start up problems. A 27 April "early" cleanup of sensitive shorelines in the Pye Islands (part of the Alaska Maritime National Wildlife Refuge) prompted complaints from the FWS that, because their monitor had not been at the site while the work was in progress, recommendations that had been accepted by TAG were not implemented in the cleanup. The FOSC took steps to assure that in the future vessel space would be available for NPS and FWS monitors for site cleanups on their lands.<sup>73</sup>

A week later, in the same area, crews which had been cleaning segments PD-2 and PD-3 (figure 7.6) were diverted to segment PD-4 (Mars Cove) by an ADNR monitor. There they did cleanup work which had not been authorized by TAG.<sup>74</sup> A few days after that, the U.S. Forest Service's oil spill liaison complained that Exxon had conducted several cleanups ahead of the authorized time windows, including a very sensitive segment on Knight Island, KN-104.<sup>75</sup> At another site on Seal Island, the Coast Guard reported that Exxon field operations supervisor Scott Nauman was passing out unsigned work orders, and that Exxon and Coast Guard field managers were having "strong" disagreements about the work to be done on particular subdivisions.<sup>76</sup> Because the Alaska Department of Natural Resources, with jurisdiction for intertidal lands, and FWS, with jurisdiction for upland areas, had different policies on the use of

72. A. Teal (Exxon), letter to Rear Adm. D. E. Ciancaglini, 11 May 1990, no. W1147, FOSC Exxon Valdez Archive. Attached to the letter was a short summary, "Biological Observations of Beach Conditions," prepared by Dr. Sam W. Stoker.

73. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 4 May 1990, no. W1238; and Rear Adm. D. E. Ciancaglini, letter to P. Gates, 9 May 1990, no. W1239, FOSC Exxon Valdez Archive.

74. USCG (Homer ICP), E-mail message to FOSC (operations), 6 May 1990, no. W1112; and J. Reed (Homer ICP), letter to R. McCampbell (ADNR), 7 May 1990, no. W1283, FOSC Exxon Valdez Archive.

75. J. Knorr (FS), letter to Rear Adm. D. E. Ciancaglini, 8 May 1990, no. W1089, FOSC Exxon Valdez Archive. Rear Adm. Ciancaglini took these incidents very seriously and instituted a number of procedural changes to assure they did not recur (Rear Adm. D. E. Ciancaglini, letter to J. Knorr [FS], 15 May 1990, no. W1090, FOSC Exxon Valdez Archive). An official investigation of the incident was conducted (J. Knorr, letter to J. Bittner [SHPO], 29 May 1990, no. W1938, FOSC Exxon Valdez Archive).

76. Lt. Comdr. D. Manning, conversation record with Lt. Comdr. K. Keane, 8 May 1990, no. W1281, FOSC Exxon Valdez Archive.

bioremediation, meetings between the two agencies proved necessary to come to terms on treatment recommendations on a subdivision-by-subdivision basis.<sup>77</sup>

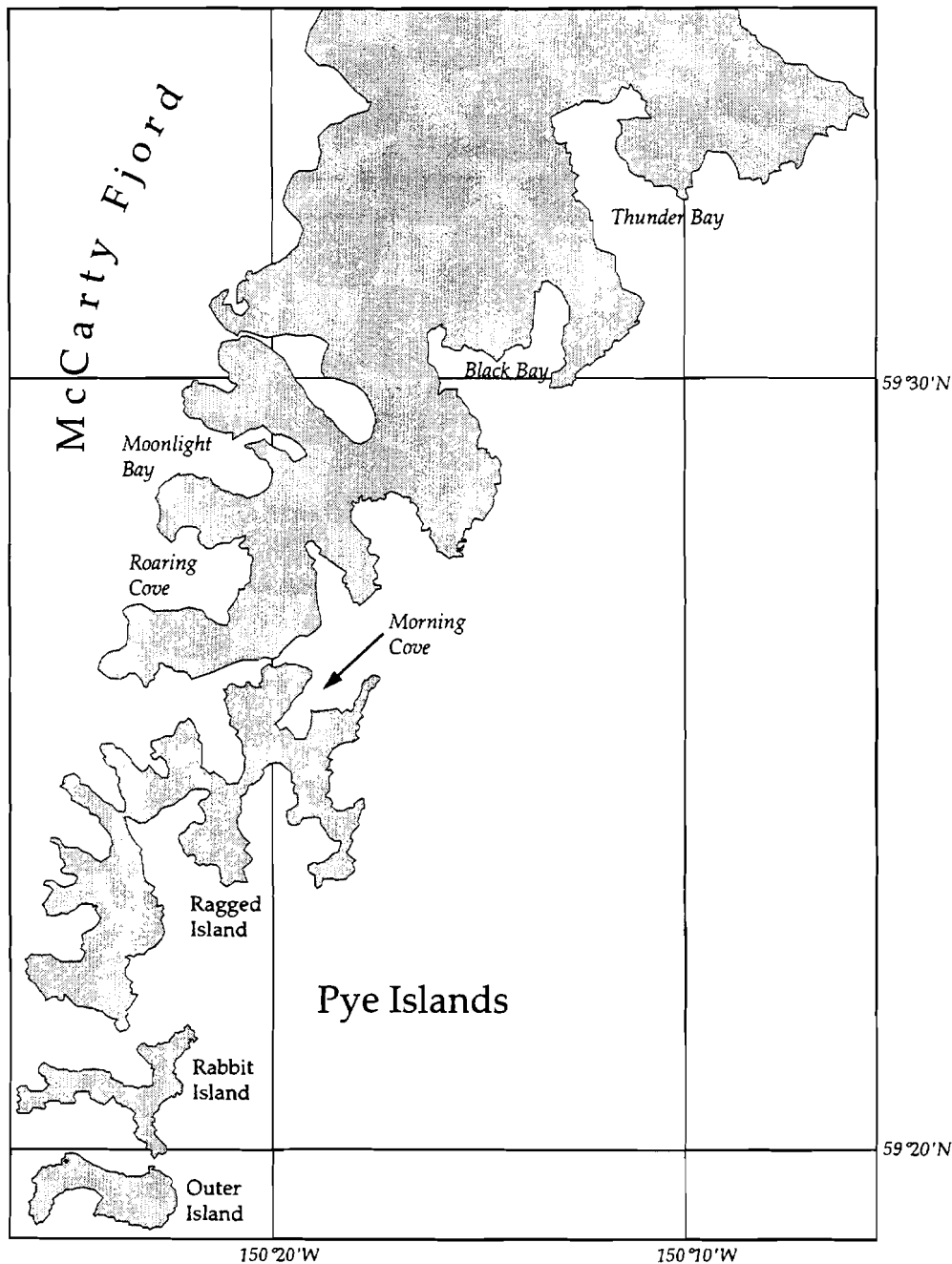


Figure 7.4. The Pye Islands and Morning Cove.

Two weeks into summer operations, Exxon reported that thirty-three subdivisions had received manual or mechanical treatment, and nineteen had received bioremediation applications.<sup>78</sup> Much had been done to tighten control of field operations under the

77. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 10 May 1990, no. W1280, FOSC Exxon Valdez Archive.

78. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 16 May 1990, no. W1080, FOSC Exxon Valdez Archive.

new TAG system. At the same time, it was also becoming clear that changes were needed to provide more flexibility in operations. Rear Admiral Ciancaglini asked the FWS to streamline its approval process for shoreline segments with bald eagle constraints.<sup>79</sup>

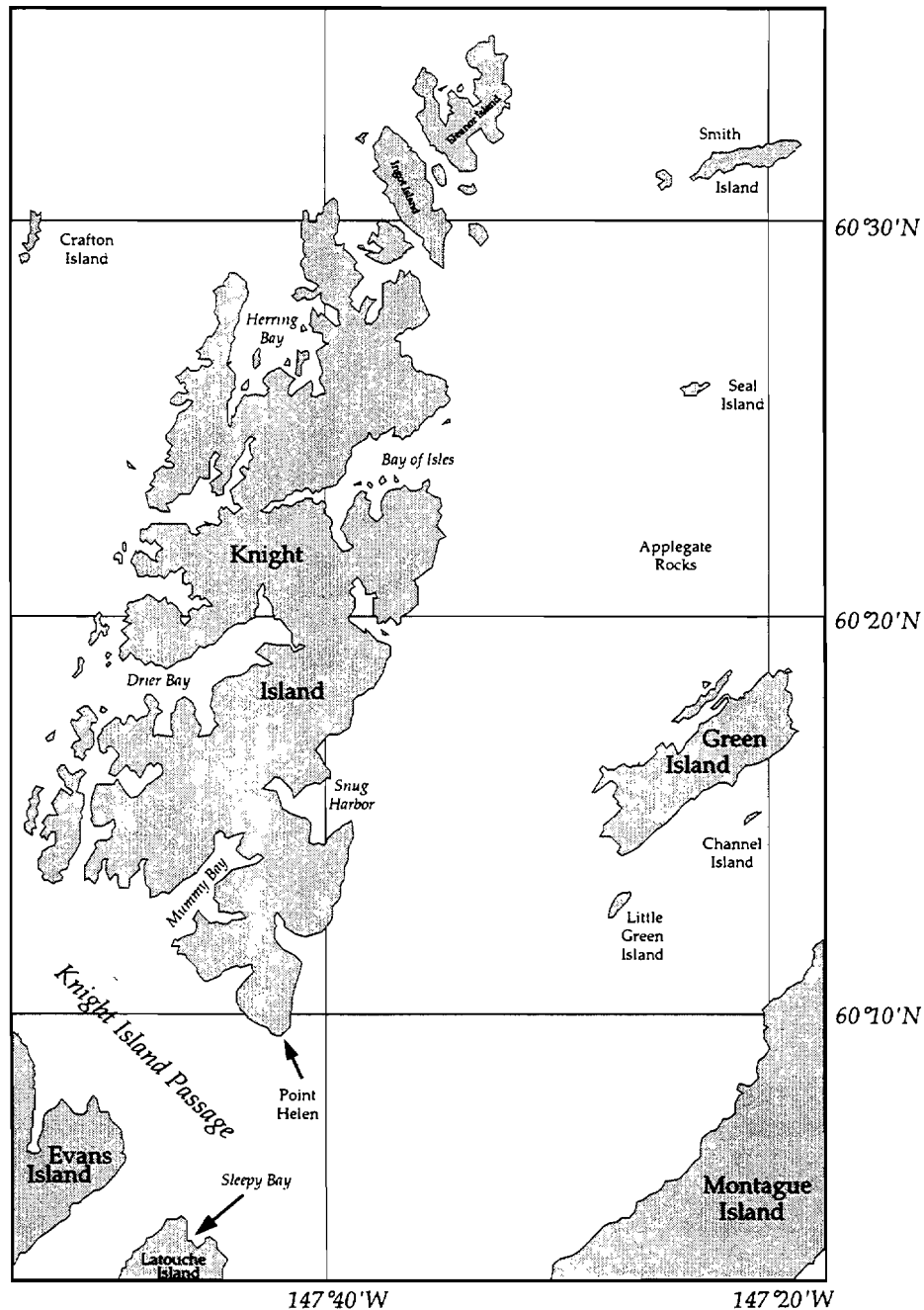


Figure 7.5. Map of Knight Island and vicinity, showing Sleepy Bay, Herring Bay, Point Helen, and the Bay of Isles.

79. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 18 May 1990, no. W1101, FOSC Exxon Valdez Archive. The attachment of a standard form "Addendum on Segment Subdivision Constraints" to approved work orders obviated the need to seek specific approvals on a case-by-case basis.

The fact that field commanders were sometimes seeking approval for variances to such standard-form rules as eagle nest constraints when the conditions encountered at the work site seemed to warrant led in late May to the promulgation of TAG work order modification procedures.<sup>80</sup> Class I, II, and III work plan modification procedures were available for minor changes when mutually agreed by the Exxon field supervisor, the Coast Guard and ADEC field monitors, and the land manager representative. Approved nonintrusive cleanup techniques could be added or subtracted from the list of those authorized in a plan by mutual agreement of those present (Class I). Extension of use of approved techniques to areas beyond the originally authorized work site (such as when more extensive contamination than expected was found) could be undertaken after "streamlined" TAG review and FOSC approval (Class II). The use of intrusive, but not TAG-authorized, techniques (including Inipol application), or other situations in which consensus could not be reached, had to be presented to TAG for full consideration and FOSC approval (Class III).<sup>81</sup> Elaborate decision trees were employed to facilitate the development of specific work order requests (figures 7.7 and 7.8)

The shoreline cleanup work that was done following the *Exxon Valdez* spill, since it potentially involved excavation and removal in navigable waters of the United States, required a so-called "Section 404" permit (under the Clean Water Act) from the U.S. Army Corps of Engineers (COE). The work was generally covered under COE's nationwide permit. But storm berm relocations, and the possibility that the "rock washer" might be put into service, raised questions about whether these activities might require special permits. The matter was soon referred to the RRT for consideration.<sup>82</sup> The decision that was reached by the RRT in late June was that all shoreline cleanup activities except the rock washer could be covered under the nationwide permit.<sup>83</sup>

The FOSC was now hoping that all work in the Seward and Kodiak areas could be completed by early July, with work in the Homer area being completed by late July or early August. The final forty-five days could then be used to concentrate the remaining effort in Prince William Sound.<sup>84</sup> A set of composite surface oiling maps at Exxon study sites released at the end of May reinforced the idea that surface oiling conditions had shown dramatic improvement in many locations over the past year.<sup>85</sup>

Many local surface oiling problems remained, however. In late May, lower Cook Inlet beach surveys were conducted out of concern that the presence of oil on shorelines in

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80. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 23 May 1990, no. W1892, FOSC Exxon Valdez Archive.

81. Ibid. The Technical Advisory Group was at this point meeting nearly continuously through the work day to process work orders, and field supervisors had access to fax machines and a daily mail run to send and receive drawings and other information about proposed modifications.

82. R. Dragnich (Exxon), letter to Rear Adm. D. E. Ciancaglini, 24 May 1990, no. W1873; and FOSC, letter to Capt. D. Bodron, 31 May 1990, no. W1874, FOSC Exxon Valdez Archive.

83. Capt. D. Bodron, memorandum to FOSC, 19 June 1990, no. W1838, FOSC Exxon Valdez Archive.

84. FOSC, letter to O. Harrison (Exxon), 25 May 1990, no. W1138, FOSC Exxon Valdez Archive. Mr. Harrison however refused to commit to this schedule (O. Harrison [Exxon], letter to Capt. D. Zawadzki, 30 May 1990, no. W1819, FOSC Exxon Valdez Archive). By the end of June the estimated completion date for the Homer area had been pushed back to 15 August (Rear Adm. D. E. Ciancaglini, letter to D. K. Kenagy [Homer ISCC], 27 June 1990, no. W1657, FOSC Exxon Valdez Archive).

85. R. Mastracchio (Exxon), letter to Rear Adm. D. E. Ciancaglini, and R. Bayliss (ADEC), 31 May 1990, no. W1180, FOSC Exxon Valdez Archive. Thirteen study sites in Prince William Sound and one site in the Gulf of Alaska were depicted.

close proximity to traditional fishing grounds might pose a threat to commercial fisheries soon to get under way in the area. Among shorelines found to be still heavily impacted by oil were Pike's Point in Port Dick, Mars Cove, and Windy Bay.<sup>86</sup> Alaska Department of Fish and Game (ADF&G) urged that these segments be given immediate attention.<sup>87</sup>

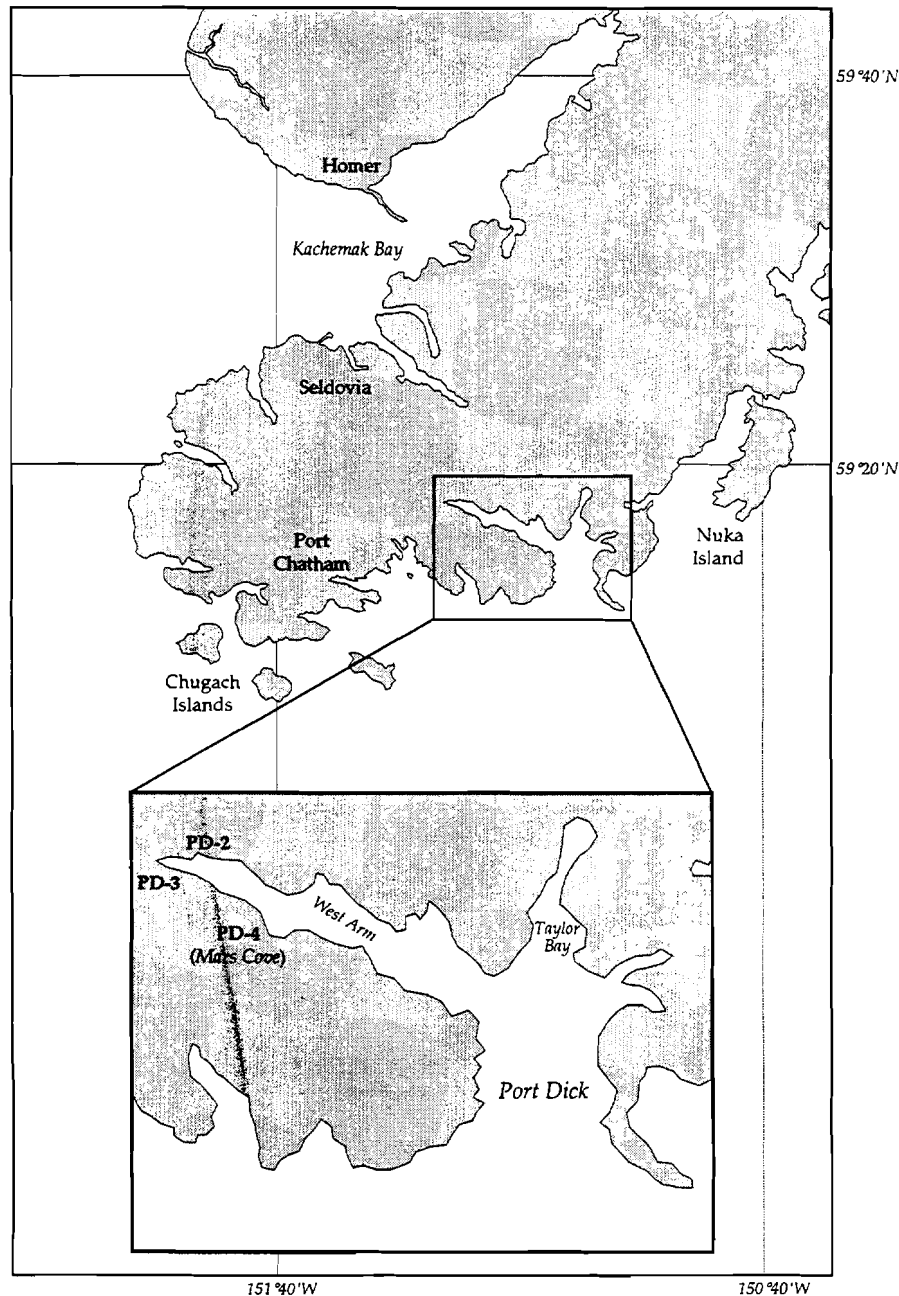


Figure 7.6. The Port Dick area on the southern Kenai peninsula with segments PD-2, PD-3, and PD-4 highlighted.

86. T. Schroeder (Exxon), memorandums to T. Monahan (Exxon Homer center), 23 May 1990, no. W1546; 24 May 1990, no. W1547; and 25 May 1990, no. W1548, FOSC Exxon Valdez Archive.

87. L. Glenn (ADF&G), letter to Lt. Comdr. J. Reed, 31 May 1990, no. W1905, FOSC Exxon Valdez Archive.

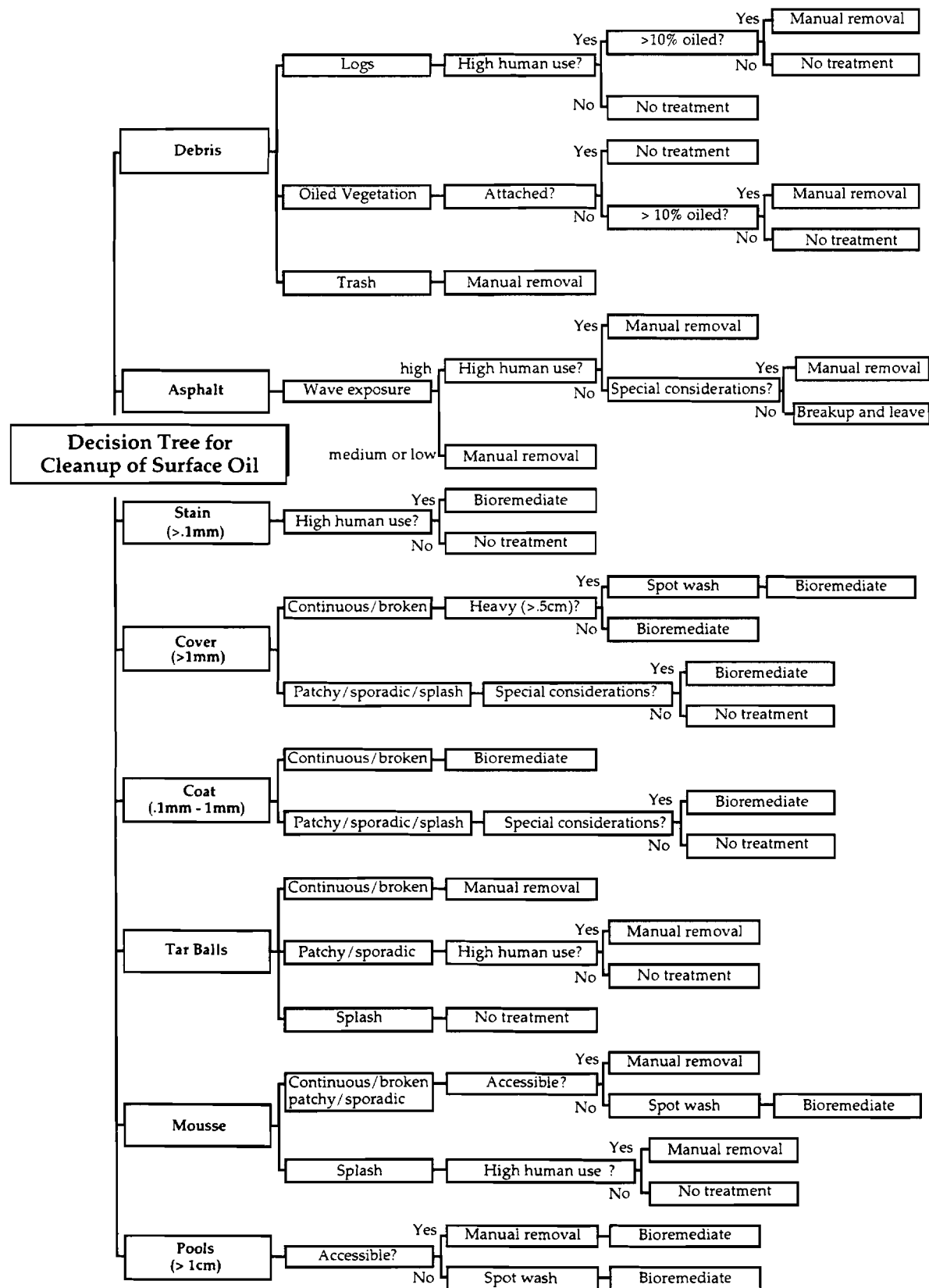


Figure 7.7. Decision tree for surface oiling.

Source: USCG, SSAT implementation documents, 1990, no. W734, FOSC Exxon Valdez Archive.

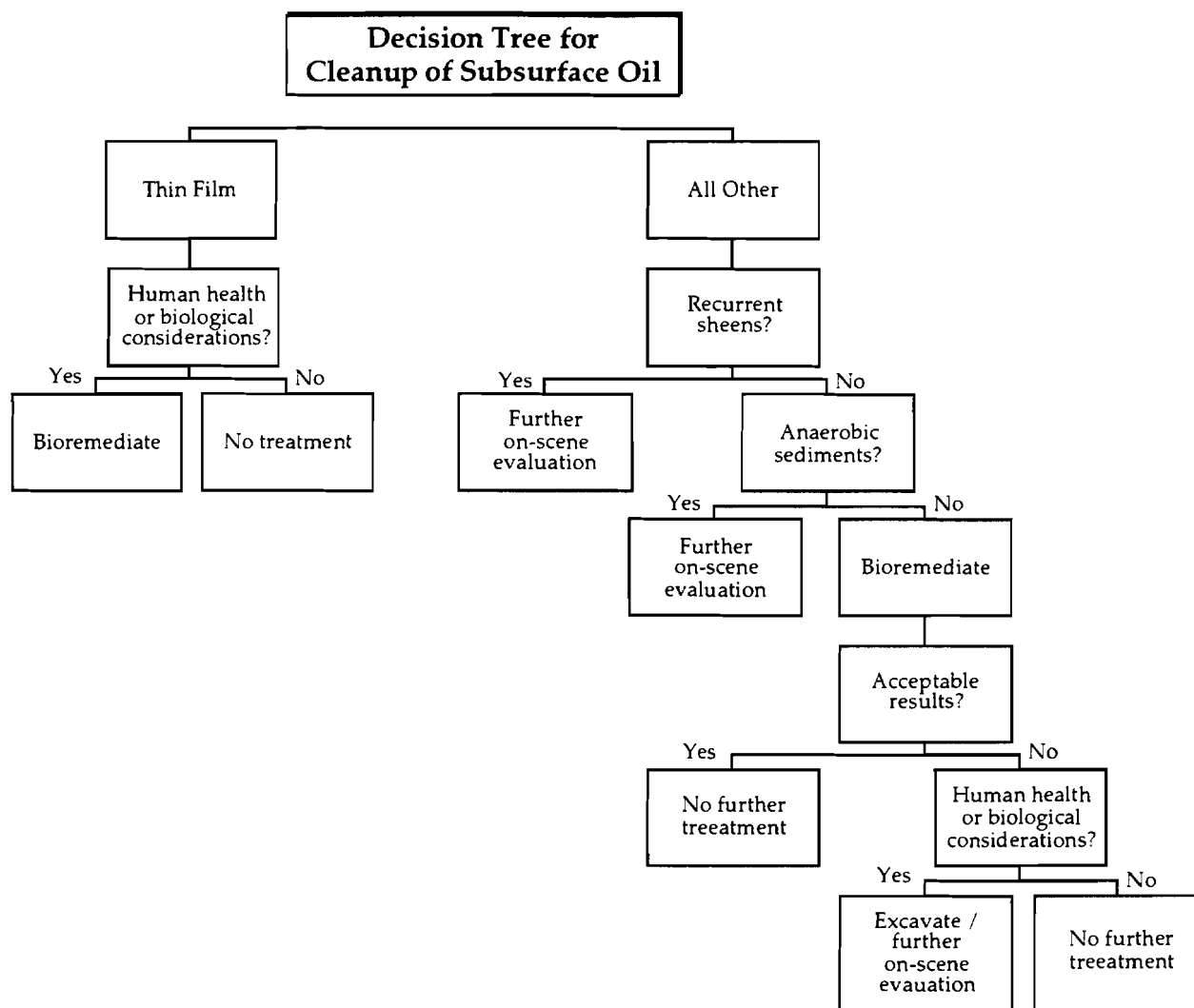


Figure 7.8. Decision tree for subsurface oiling.

Source: USCG, SSAT implementation documents, 1990, no. W734, FOSC Exxon Valdez Archive.

The controversial hot-water washing that was done in 1989 was not nearly so common in the 1990 cleanup. However, a new use of hot water in “spot washing” to remove pooled oil was proposed in late May of 1990.<sup>88</sup> Otto Harrison at first resisted deploying the high volume “two pack” system that was proposed, as he was then in the throes of seeking approval for the use of Corexit, and an argument being made for Corexit’s adoption was that it would increase the effectiveness of spot washing at lower temperatures.<sup>89</sup> Windy Bay, which because of its high subsistence use value was of special concern to the Port Graham (Native) Corporation, was one area where the combination of Corexit and hot-water washing was envisioned.<sup>90</sup> The matter was scheduled for TAG to review on 13 June. All parties soon agreed that the two pack

88. Capt. D. Zawadzki, letter to O. Harrison (Exxon), 26 May 1990, no. W1136, FOSC Exxon Valdez Archive.

89. O. Harrison (Exxon), letter to Capt. D. Zawadzki, 30 May 1990, no. W1820, FOSC Exxon Valdez Archive.

90. Rear Adm. D. E. Ciancaglini, letter to P. Norman (Port Graham Corp.), 13 June 1990, no. W1798, FOSC Exxon Valdez Archive.



system could be used in situations in which a large oil lens was buried in sediment directly over bedrock.<sup>91</sup>

On 11 June, the FOSC released his plans to phase out the current summer's operations. The four ICPs would be closed sequentially, beginning with ICP Seward in mid to late July.<sup>92</sup> On 13 June, it was announced that Exxon would conduct an August shoreline survey (later called the August Shoreline Assessment Program [ASAP]) to identify segments for treatment or re-treatment before the scheduled mid-September shutdown of operations.<sup>93</sup> Exxon was also said to be projecting the need for April 1991 surveys.

The FOSC was now involved in active discussion with Coast Guard Headquarters on how "final" subdivision sign offs would be conducted.<sup>94</sup> The idea being worked on was that subdivisions should be individually signed off in a letter to the governor of Alaska, and that such sign off should prejudice neither federal rights to further action nor state rights to further action under state law. Rear Admiral Ciancaglini wrote to Governor Cowper to inform him of the procedures he would use to determine whether further oil removal was necessary under federal law. The standards he intended to apply in determining removal completeness for particular subdivisions were that:

- a. There is no longer any detectable oil present on the water, adjoining shorelines, or places where it is likely to reach water again; or
- b. Further removal operations would cause more environmental harm than the oil to be removed; or
- c. Cleanup measures would be excessively costly in view of their insignificant contribution to minimizing a threat to the public health or welfare, or the environment; and
- d. Activities required to repair unavoidable damage resulting from removal actions have been performed.<sup>95</sup>

The FOSC stated further that subdivisions not meeting these conditions, which he expected to be relatively few in number, would be carried over to the next spring.

As June came to an end, there were continued protests from the state about the degree of site preparation being done prior to application of bioremediation. Coast Guard field operations supervisor Commander D. Rome had suggested, and the state had welcomed, the idea of a "recalibration" field exercise involving monitors from the four principal agencies, in hopes of reaching greater harmony on the point. Exxon, however, objected to the proposed exercise.<sup>96</sup> Otto Harrison chastised state OSC Randy

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91. Rear Adm. D. E. Ciancaglini, letter to Capt. D. Zawadzki, 7 June 1990, no. W1821, FOSC Exxon Valdez Archive.

92. USCG FOSC chief of staff, memorandum to FOSC division chiefs, 11 June 1990, no. W1260, FOSC Exxon Valdez Archive.

93. Lt. Comdr. Forbes, memorandum to chief of staff, 13 June 1990, no. W1528, FOSC Exxon Valdez Archive.

94. Capt. R. Larrabee, facsimile to Capt. D. Zawadzki, 18 June 1990, no. W1208, FOSC Exxon Valdez Archive.

95. Rear Adm. D. E. Ciancaglini, letter to Gov. Cowper, 22 June 1990, no. W1835, FOSC Exxon Valdez Archive.

96. C. Burgh (ADEC), letter to Rear Adm. D. E. Ciancaglini, 25 June 1990, no. W1357; and O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 29 June 1990, no. W1715, FOSC Exxon Valdez Archive. The meeting went forward on 3 July. Adm. Ciancaglini felt that it had been successful, pointing out in a follow-up letter to Otto Harrison that in his view agreement on the difference between pooled oil, to which bioremediation could not be applied and oily residue (to which it

Bayliss for having instituted a practice of “grading” the performance of Exxon shoreline crews.<sup>97</sup>

Among the sites identified as needing immediate attention in the late May lower Cook Inlet beach surveys, perhaps Mars Cove was the most critical for immediate attention. It was not only the most heavily oiled site in the Port Dick area, but it was also located where the bulk of the area’s commercial sockeye and pink salmon fisheries occurred.<sup>98</sup> It had not been cleaned prior to the imposition of the purse seine fishery environmental constraint, however (25 June to 31 August). The state decided it was an important enough site that the time constraint should be waived and special arrangements made so that the site could be cleaned during July while the fishery was in progress.<sup>99</sup> While this added opportunity to clean the site was welcomed, ADF&G tried to reserve the application of bioremediation (specifically Inipol) until after 1 September. Exxon found this unacceptable, and the FOSC, citing the original work order for the site, agreed that the cleanup should proceed as originally planned.<sup>100</sup>

These repeated skirmishes over control of how and when bioremediation was being used in the shoreline cleanup were, it turned out, just precursors to a much bigger battle to come, and it was at this point that the state tried to impose its 5 g/kg oily residue standard on sediments to which bioremediation was to be applied.<sup>101</sup>

The ongoing problem of the sometimes severe constraints imposed on shoreline cleanup operations as a result of the presence of active eagle nests was addressed in mid-July. By establishing exactly what the status of active nests was on a nest-by-nest basis, the FWS became able to define more precisely when the periods most critical to successful nesting and fledging were. A list was provided to all ICPs that would facilitate the scheduling of operations in their zones around the constraints that were due to the nests.<sup>102</sup> A few weeks later, toward the end of July, FWS decided on the basis of reports from their field monitors that nests with eaglets in advanced stages of development could tolerate more disturbance than had generally been supposed. A general slackening of the eagle constraint was granted, permitting for example brief incursions into the immediate vicinity of nests after 1 September.<sup>103</sup> Similarly, a closer examination of the status of Prince William Sound fisheries taking place in July led to increased flexibility in the scheduling of cleanup in the vicinity of Eshamy Bay and other fishing grounds.<sup>104</sup> By 7 August, a whole range of constraints related to environmental resources, commercial fisheries and subsistence use had been relaxed to permit second applications of bioremediation.<sup>105</sup> By the account of ADF&G, however,

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could), was essential if the bioremediation program was to succeed (Rear Adm. D. E. Ciancaglini, letter to O. Harrison [Exxon], 9 July 1990, no. W1716, FOSC Exxon Valdez Archive).

97. O. Harrison (Exxon), letter to R. Bayliss (ADEC), 29 June 1990, no. W1853, FOSC Exxon Valdez Archive.

98. L. Glenn (ADF&G), letter to Lt. M. Bernard, 29 June 1990, no. W1551, FOSC Exxon Valdez Archive.

99. *Ibid.*

100. R. Mastracchio (Exxon), letter to Comdr. D. D. Rome, 2 July 1990, no. W1561; and Capt. D. Zawadzki, letter to R. Mastracchio (Exxon), 7 July 1990, no. W1562, FOSC Exxon Valdez Archive.

101. This issue is treated fully in chapter 10, “Bioremediation.”

102. J. Phillips (Exxon), letter to Comdr. G. Reiter, 19 July 1990, no. W1777, FOSC Exxon Valdez Archive.

103. Acting Regional Director (FWS), letter to O. Harrison (Exxon), 27 July 1990, no. W1416, FOSC Exxon Valdez Archive.

104. J. Phillips (Exxon), letter to Comdr. G. Reiter, 19 July 1990, no. W1717, FOSC Exxon Valdez Archive.

105. J. Phillips (Exxon), memorandum to A. Teal (Exxon), 7 Aug. 1990, no. W1415, FOSC Exxon Valdez Archive.

Exxon was still complaining that environmental constraints were impeding the cleanup.<sup>106</sup>

Plans for the August Shoreline Assessment Program (ASAP) were finalized in late July. The state of Alaska supported expeditious conduct of the surveys under the understanding that "all known oiled shorelines" would be re-evaluated the following spring.<sup>107</sup> Access to bald eagle and sea bird buffer zones for the purposes of the surveys was granted by FWS.<sup>108</sup> The Alaska Department of Environmental Conservation produced and transmitted to Exxon an extensive list of "priority segments" that the agency viewed as "must" inclusions in the surveys.<sup>109</sup>

On 24 July, Otto Harrison informed Rear Admiral Ciancaglini and state OSC Randy Bayliss that he expected all cleanup work not then on hold due to environmental constraints to be completed by mid-August. He expected that the upcoming shoreline surveys would be completed by the end of August, and stated that he did not see the need to perform any shoreline work between 15 September and 1 May 1991, when the spring surveys were expected to commence.<sup>110</sup>

#### THE COMMANDANT'S LATE JULY VISIT

On 27–29 July, Admiral Kime, now Coast Guard commandant, paid another visit to the response area. On the visit he conferred with officials from Exxon and the state, and had a meeting with the "oiled mayors"—the mayors of cities and boroughs that had suffered either direct oiling or socio-economic impacts as a result of the spill. His visit was timed to precede the start up of the ASAP surveys, and to signal that the response would go on into 1991.

As it turned out, his arrival in Anchorage came just as the state's attempt to impose its 5 g/kg standard on final bioremediation had been "resolved" with Rear Admiral Ciancaglini's rejection of the state position.<sup>111</sup> It also followed on the heels of other significant events in the relationship between state and federal parties, notably the rejection of the rock washer, and Rear Admiral Ciancaglini's outlining of the procedures he intended to follow in giving final sign off to segments affected by the spill. These issues occupied much of the commandant's discussion with state and Exxon officials.

The sign-off issue was particularly complicated at this point, as each of the parties had different interests in it. Rear Admiral Ciancaglini was anxious to consolidate the gains that had been made in the four hundred subdivisions jointly agreed by the Coast Guard and the state to require no further treatment, and in the four hundred additional subdivisions that had been demobilized at the field level following treatment.

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106. M. Kuwada (ADF&G), letter to O. Harrison (Exxon), 14 Aug. 1990, no. F206, FOSC Exxon Valdez Archive.

107. R. Bayliss (ADEC), letter to O. Harrison (Exxon), 20 July 1990, no. W1741, FOSC Exxon Valdez Archive.

108. USCG, "ASAP Segment/Subdivision Assessment List," no. W1322, FOSC Exxon Valdez Archive.

109. R. W. Morris (ADEC), letter to A. Teal (Exxon), 27 July 1990, no. W1471, FOSC Exxon Valdez Archive.

110. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, and R. Bayliss (ADEC), 24 July 1990, no. W1643, FOSC Exxon Valdez Archive.

111. Rear Adm. D. E. Ciancaglini, letter to D. Kelso (ADEC), 26 July 1990, no. W1317, FOSC Exxon Valdez Archive.

From the standpoint of the U.S. Department of Justice,<sup>112</sup> however, sign off by the federal government might be seen by the state as prejudicial to attempts it might then make to require Exxon to clean beyond federal standards. If that were to occur, the united front that the state and federal governments had to project in litigation with Exxon might be eroded.<sup>113</sup> From comments made later in the day by Exxon general manager Otto Harrison, it was clear that Exxon was indeed fearful that Coast Guard departure might open the door for the state to issue compliance orders against Exxon. While Mr. Harrison did not say it, there was speculation at the meeting that the coming gubernatorial change in Alaska could result in a state administration more favorable to Exxon's position.<sup>114</sup>

Meetings with state officials, including ADEC Commissioner Kelso and assistant to the governor, Ernie Piper, served to underscore how different the perceptions of the state and Coast Guard had become on the state's role in the response, despite an underlying theme of continued cooperation in many areas. Commissioner Kelso felt that what he thought should be a "joint" federal-state response was in fact a federal response with state consultation. He felt there had been a systematic failure to chart a course for the response in which the NCP responsibilities of the FOSC and the state statutory responsibilities were made mutually compatible under a single umbrella.<sup>115</sup>

Admiral Kime felt that the problem was that the state was trying to achieve its standards for cleanup in a single year, thus demanding that whatever was necessary to get all oiled areas down to contamination levels where bioremediation could "finish" the job be done. He believed that the state had become fixated on questions of protecting human use in some areas to the point that it was willing to exact unacceptable environmental damage to achieve that end.<sup>116</sup>

Mr. Kelso and Mr. Piper turned back to questions of process, citing the net environmental benefit analysis (NEBA) that was done on the rock washer in particular as an example of a result that conveyed an appearance of state concurrence, but where, in their view, the process that produced the study's conclusions had not truly incorporated the state's views.

#### AUGUST SHORELINE ASSESSMENT PROGRAM & THE WINDING DOWN OF 1990 OPERATIONS

As the ASAP surveys were getting under way, a list of "NTR" subdivisions identified in the spring surveys, but on which tarballs had since been found, was brought to the

112. The U.S. Department of Justice (DOJ) was represented in the commandant's delegation by Stuart Gerson, assistant attorney general and chief of DOJ's civil division.

113. USCG, "Summary of FOSC, State of Alaska, and Exxon Company Briefings for Adm. J. William Kime, Commandant, U.S. Coast Guard," 27 July 1990, no. W1351, FOSC Exxon Valdez Archive. The blowups with the state over use of the rock washer and imposition of the 5 g/kg standard were seen as indicative of there being a strong likelihood the state might feel "left in the lurch" by a premature federal departure from the scene.

114. Governor Cowper had announced that he would not run for re-election, and Walter Hickel, a conservative, was being widely seen as the front runner in the race for the governor's seat.

115. USCG, "Summary of FOSC, State of Alaska, and Exxon Company Briefings for Adm. J. William Kime, Commandant, U.S. Coast Guard." Remarks of Dennis Kelso as summarized in the document.

116. *Ibid.* To site an example frequently brought up in this context by Coast Guard, NOAA, and Exxon personnel (but not in Adm. Kime's remarks), excavating anadromous stream beds would remove buried oil that posed only moderate to low threat to the viability of salmon runs, but at the cost of setting back recovery of in-stream biological function.

attention of the FOSC by the state. The information had been compiled by the PWSCA under state sponsorship. ADEC requested that this information be integrated with that being generated in the official survey work. The PWSCA asked also that a wide-ranging tarball pickup program be instituted and that procedures be developed by which volunteers could report the locations of tarballs directly to Exxon.<sup>117</sup> Rear Admiral Ciancaglini felt it was impractical to try to recover stranded tarballs over so extensive an area, but agreed that the unsurveyed shorelines which the volunteers had found to be most contaminated should be examined in the official joint survey program then underway.<sup>118</sup>

The surveys got underway on 1 August, conducted by five teams, each made up of representatives of Exxon, the Coast Guard, ADEC, NOAA, land managers, and an oil geomorphologist. The objectives were to determine if additional work was needed in the remainder of the current year, and to identify priority shorelines for spring 1991 surveys.<sup>119</sup> All 607 shorelines that had been treated up to that point would be visited, except in cases where there was mutual agreement among the agencies that a follow up visit was not necessary.

By 9 August, considerable survey work had been completed, but operations were on weather hold. A few reports coming in from the field were indicating more oil being found than expected.<sup>120</sup> Priority was given to developing work order modifications for the subdivisions in question, so that they could be cleaned before the end of the cleanup season.

In late August, NOAA requested Rear Admiral Ciancaglini's support for a 1990-91 winter study plan. Rear Admiral Ciancaglini felt the early information on the status of shorelines it could provide would be well worth the study's modest cost, and asked Otto Harrison to fund the study.<sup>121</sup> The program went forward. Otto Harrison again went on record to the state of Alaska that Exxon would not support local winter response projects. He felt the proposals then under consideration were extremely uneconomic, and pointed out that the decision had been made to close the Joint Transportation Center (JTOC) for the winter, meaning that little back-up support would be available if needed.<sup>122</sup> Exxon released its own "1990 Work Program Status and 1990-91 Winter/Spring Program" on 1 September.

Preliminary data from the ASAP surveys revealed that 61.7 miles of oiled shoreline remained (37.7 miles of the total within Prince William Sound). Most (61 percent) was in the "very light oiling" category. Only 13 percent was found to be "medium" in

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117. Comdr. D. D. Rome, letter to C. Burgh (ADEC), 8 Aug. 1990, no. W1382; and N. Lethcoe (PWSCA), letter to Rear Adm. D. E. Ciancaglini, 7 Aug. 1990, no. W1682, FOSC Exxon Valdez Archive.

118. Rear Adm. D. E. Ciancaglini, letter to N. Lethcoe (PWSCA), 14 Aug. 1990, no. W1683, FOSC Exxon Valdez Archive.

119. Rear Adm. D. E. Ciancaglini, letter to D. Gilman (mayor, Kenai Peninsula Borough), 8 Aug. 1990, no. W1364, FOSC Exxon Valdez Archive.

120. A. Weiner (NOAA), memorandum to B. Wescott (NOAA), 9 Aug. 1990, no. W1367, FOSC Exxon Valdez Archive.

121. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 27 Aug. 1990, no. W1665, FOSC Exxon Valdez Archive.

122. O. Harrison (Exxon), letter to R. Bayliss (ADEC), 27 Aug. 1990, no. W1404, FOSC Exxon Valdez Archive. Some of the programs nevertheless were continued into the 1990-91 winter (D. Lockwood [ADEC], letter to N. Gross [city of Cordova], 12 Sept. 1990, no. W1583; and "Cowper Commends Spill Cleanup, Calls for More Work Next Year" (news release no. 90-122, from the office of Governor Cowper, 13 Sept. 1990), no. W1493, FOSC Exxon Valdez Archive).

oiling, and just 6 percent (3.8 miles) of the oiled shoreline found was classified as "heavy."<sup>123</sup> Of 289 segments surveyed in Prince William Sound, ADEC was recommending reassessment in the spring on 244 of them. The state's conservatism on reassessment was due in part to the fact that ASAP surveys did not include subsurface oil investigations.<sup>124</sup>

On 14 September, Rear Admiral Ciancaglini officially notified Exxon of his intentions to commence spring shoreline assessments on 1 May (in the program that would become known as the May Shoreline Assessment Program [MAYSAP]).<sup>125</sup> The final ASAP summary was released on 24 September. It indicated that a total of 822 work sites on 521 subdivisions had been surveyed. One hundred sixty three sites were unanimously recommended by all agencies for re-survey in 1991, 114 others were assigned "low priority" status by mutual agreement, and 244 were reserved for further discussion. "Wide" oiling was identified on just 4.3 shoreline miles, nearly all in Prince William Sound.<sup>126</sup> The comparison between surface oiling conditions between the spring (SSAT) surveys and the August (ASAP) survey is shown in figure 7.9.

As in the previous winter, reduced staffs in the agencies worked to prepare for the third year of the response effort. In late November ADEC released a document describing its "policies, requirements and guidelines" for the 1991 response.<sup>127</sup> The plan continued to insist, as state authorities had throughout the preceding summer, that the state's authority was concurrent with that of the federal government. The plan also reiterated the point that the state, while a full participant in the processes the FOSC had established, retained its rights to impose stricter standards.

Rear Admiral Ciancaglini found much to praise in the plan's intentions to develop an integrated state-federal response effort in 1991, but continued to point out that the federal government is the lead agency in the response.<sup>128</sup> Perhaps of significance in the plan, however, it did not insist on cleanup to state standards under the federally monitored cleanup, as state officials had seemed to the Coast Guard to demand repeatedly through the year just past:

If the state sets stricter requirements or requires additional work, the state will work directly with Exxon to insure full compliance with state pollution statutes, regulations, and policies.<sup>129</sup>

As the year ended, the first scoping meeting for the MAYSAP surveys to come was held.<sup>130</sup>

123. ADEC, "Degrees of Oiling from 1990 ASAP Survey," 5 Sept. 1990, no. W1495, FOSC Exxon Valdez Archive.

124. ADEC, "Reassessment vs. No Reassessment" (preliminary data, 11 Sept. 1990), no. W1496, FOSC Exxon Valdez Archive.

125. Rear Adm. D. E. Ciancaglini, letter to A. Teal (Exxon), 14 Sept. 1990, no. W1478, FOSC Exxon Valdez Archive.

126. Exxon, "1990 ASAP Summary," 24 Sept. 1990, no. W1584, FOSC Exxon Valdez Archive.

127. ADEC, "1991 State Response Plan: Policies, Requirements, Guidelines," 26 Nov. 1990, no. F020, FOSC Exxon Valdez Archive.

128. Rear Adm. D. E. Ciancaglini, letter to E. Piper (ADEC), 28 Nov. 1991, no. F31, FOSC Exxon Valdez Archive.

129. ADEC, "1991 State Response Plan: Policies, Requirements, Guidelines," 5.

130. Exxon, "1991 May Shoreline Assessment Program (MAYSAP) Survey Scope Discussion," 11 Dec. 1990, no. F035, FOSC Exxon Valdez Archive.

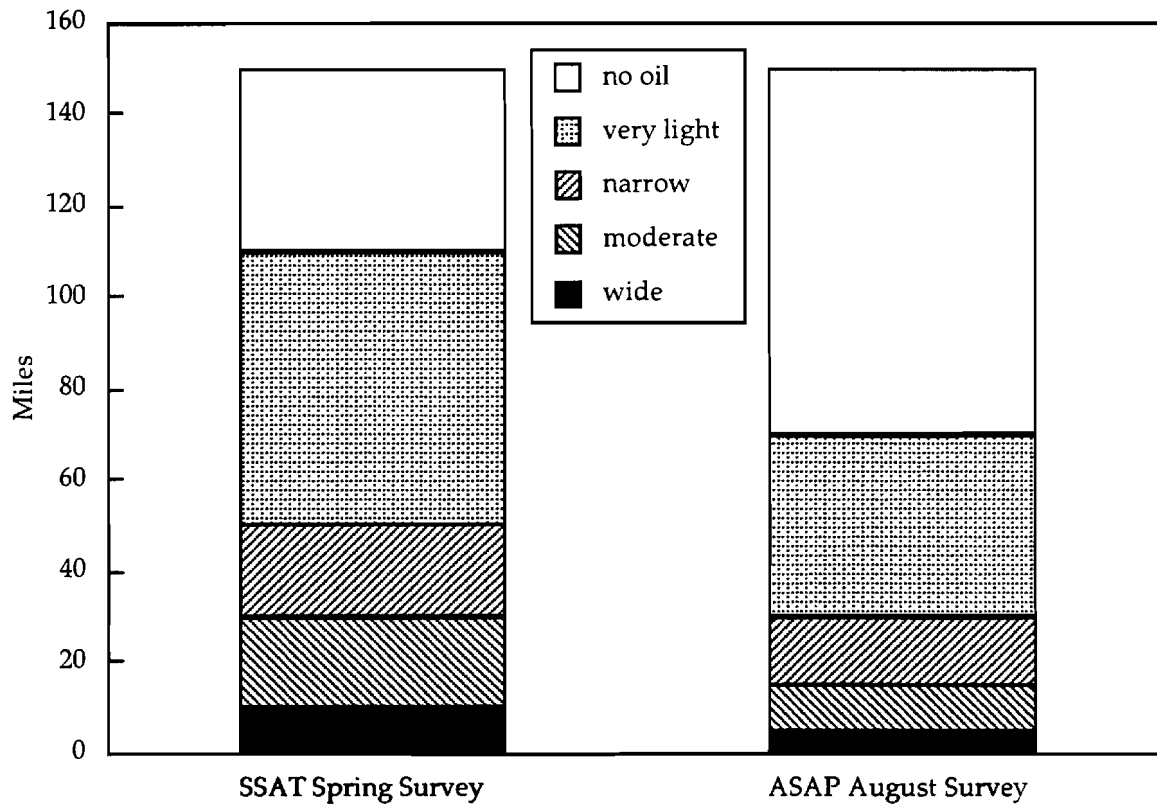


Figure 7.9. Surface oil comparison, spring 1990 to August 1990, 148 miles common to SSAT and ASAP.

## SUMMARY

The year 1990 began with concerted efforts by the federal response agencies to establish a heretofore absent overriding rationale and sense of direction for the shoreline cleanup to come. The dominant message of both NOAA and Coast Guard communications early in the year was that bioremediation and other less intrusive cleanup methods should be the primary cleanup tools. Mechanical tilling and hot-water washing should be reserved for the special cases where the benefits in reduced environmental risk warranted the additional environmental costs which winter studies had suggested were associated with such intrusive techniques. The National Oceanic and Atmospheric Administration's leadership in formulating and seeking broad consensus on these points was especially evident during the early winter months, when its behind-the-scenes efforts to promote acceptance of its own study results seemed to have paved the way for the "consensus document" that emerged from the February Newport Beach workshop.

Carrying this general consensus forward into the details of operational decision making proved more difficult than might have been supposed on the basis of these early accords. The debates with the state over the use of bioremediation and the shoreline cleaner Corexit, which had failed to be fully resolved in 1989, became particularly fractious in 1990. New battles, like those over the rock washer and the storm berm relocation on US-10, likewise showed depths of discord which had been little evident earlier on. Efforts by the commandant himself to negotiate pre-startup commitments

from Exxon and the state to accommodate one another's desires with respect to the use of bioremediation and shoreline excavation techniques seem to have had little impact once the cleanup was underway.

Efforts by the state to secure a greater role in decision making appear to underlie much of the confrontation that occurred in 1990. The state fairly consistently argued for more extensive cleanup by manual or mechanical means than TAG recommended or the FOSC approved. Where such resources as anadromous fish streams or high subsistence use areas were judged by state officials to be at long-term risk as a result of subsurface oiling, the state advocated excavation and removal that the FOSC believed did not provide net environmental benefits. Where bioremediation was to be used, the state often found itself arguing for more extensive surface preparation than the FOSC and TAG felt was warranted.

The use being made of net environmental benefit analysis in justification of cleanup decisions was frequently the focal point of controversy during 1990. On a different level however, the assumption of the ISCC's role in shoreline cleanup decision making by TAG cannot be discounted as a contributing cause to the conflict that ensued. While TAG increased the efficiency of shoreline cleanup decision making, its mere existence created an impression in many that their own roles in decision making had been diminished. This feeling of disenfranchisement may have led state agencies in particular to dig in their heels more deeply than before when they disagreed with the decisions and recommendations others had made.

Ultimately, as the 1990 cleanup season came to a close, the state seemed to relent on efforts to secure cleanup to state standards under FOSC direction. When, in late November, the state released its own response plan for 1991, it had seemingly shifted its strategy to one of full participation with the FOSC on the federally directed cleanup, while at the same time exercising its right to impose stricter cleanup standards through selected cleanups it undertook with its own resources.





## CHAPTER 8. SHORELINE CLEANUP IN 1991 AND 1992

### OVERVIEW OF SHORELINE CLEANUP IN 1991

Shoreline cleanup efforts went forward in 1991 under basically the same framework as in 1990. An extensive list of shoreline segments put together at the end of 1990 operations was re-surveyed in the May Shoreline Assessment Program (MAYSAP). The survey was conducted jointly by the response agencies, with land manager involvement. The results formed the basis for the cleanup operations that got underway in June, with the Technical Advisory Group (TAG) again providing cleanup recommendations to the Federal On Scene Coordinator (FOSC). Exxon carried out the great bulk of the cleanup work that was done, under an operations framework it developed and submitted to the FOSC for approval just prior to commencement of the 1991 operations. The state also conducted cleanup work.

Cooperation among the principal agencies was generally very high in 1991. The new Alaska governor, Walter Hickel, appointed a new commissioner of the Alaska Department of Environmental Conservation (ADEC), John Sandor, who retained Ernie Piper as his OSC. The state became much more cooperative in its dealings with Exxon and the FOSC, but also more aggressive in pursuing its own cleanup on selected shorelines, in line with the precepts it had articulated in its earlier "1991 Response Plan," released in November of 1990.

A subtle but significant shift in the authority the Coast Guard had to "direct" Exxon's continuing cleanup efforts occurred as a result of the settlement agreement reached in the suit brought by the state and federal governments against Exxon. The settlement agreement reached by the parties in March 1991 gave the FOSC the authority to pre-approve all future costs associated with the cleanup.<sup>1</sup> This had the effect of reining in the aspirations of other agencies with respect to the scope of activity that should be undertaken in the name of response. One result was that the path that would lead to the end of the response and to the beginning of the restoration program to follow was defined more clearly than it had been in previous years.

The settlement agreement also served to put the FOSC somewhat more directly in the "line of fire" than previously with respect to the exercise of statutory authority by other federal and state resource agencies. As has been pointed out in the discussion of the cleanup efforts of previous years, the demands of these agencies could have a significant constraining effect on the conduct of cleanup operations, to the frequent frustration of Exxon's operations managers. The difficulties environmental constraints posed for the FOSC in his new "directing" role are well illustrated by the FOSC's efforts to assure that survey and cleanup activity in 1991 could go forward around the bald

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1. These provisions of the March settlement agreement remained in force despite the settlement agreement's rejection by the U.S. District Court. This seeming oddity, and the broader ramifications of the added measure of control accorded the Coast Guard as a result, are discussed more fully in chapter 23, "Finance and Accounting."

eagle constraints that were imposed by the U.S. Fish and Wildlife Service (FWS) in that year.

These and other issues that affected the conduct of shoreline cleanup operations in 1991 are explored in the sections that follow.

### PREPARATIONS FOR THE 1991 CLEANUP

The Technical Advisory Group itself was again an issue for a brief period as 1991 began. The first TAG meeting of the new year was held on 15 January. Planning for the MAYSAP surveys was the principal agenda item. The state made it clear through its TAG representative, John Bauer, that it expected a comprehensive survey to be done by MAYSAP, one which would again incorporate segments identified as still needing attention by the local response efforts that were still taking place.<sup>2</sup>

Following the meeting, state OSC Ernie Piper wrote to Rear Admiral David Ciancaglini to explain the rules which would govern state participation in TAG during 1991:

The TAG[’s]...decision-making authority rests solely with the FOSC, and while state requirements and recommendations are accepted for consideration by the TAG, the state has no power to enforce its requirements....Our cooperation with the federal TAG does not bind us to the opinions or interpretations of other TAG members.

The TAG has been repeatedly characterized as simply an impartial referee of scientific debate. I do not agree entirely with that characterization....[T]here is no legal or practical reason why the state should bind itself to positions that may not fully meet state objectives, requirements or statutory responsibilities....[W]hile consensus is desirable, the lack of consensus for valid reasons in no way impedes the Coast Guard in carrying out its mission under the National Contingency Plan.<sup>3</sup>

Mr. Piper thus reinforced the position the state had taken in its November 1990 “Response Plan for 1991.” Rear Admiral Ciancaglini disagreed with many of Mr. Piper’s assertions, pointing out that in his view state and federal standards had the same objectives, and stressing the importance of continued state participation in TAG.<sup>4</sup> Mr. Piper also noted that the state had never agreed to the closed meeting format of TAG. As it had done in 1990, the Sierra Club Legal Defense Fund again questioned the legality of the closed meeting format of TAG, taking their case this time directly to the commandant.<sup>5</sup>

Through January and February the FOSC undertook efforts to solicit from the resource agencies and others nominations for shorelines to include in the surveys scheduled to

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2. J. Bauer (ADEC), letter to A. Teal (Exxon), 18 Jan. 1991, no. F429, FOSC Exxon Valdez Archive.

3. E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 18 Jan. 1991, no. F428, FOSC Exxon Valdez Archive.

4. Rear Adm. D. E. Ciancaglini, letter to E. Piper (ADEC), 23 Jan. 1991, no. F435, FOSC Exxon Valdez Archive.

5. T. Waldo (Sierra Club Legal Defense Fund), letter to Adm. J. W. Kime, 16 Feb. 1991, no. F624, FOSC Exxon Valdez Archive.

get underway on 26 April.<sup>6</sup> Exxon held a 23 January meeting to solicit agency information on ecological constraints for the 1991 cleanup.<sup>7</sup>

Alaska Department of Fish and Game (ADF&G) representatives again expressed concerns over the level of treatment to be accorded to anadromous streams. Mark Kuwada felt that the decision charts developed to support TAG shoreline treatment recommendations provided for less effort to clean anadromous fish streams than ADF&G had been advocating. An attempt by ADF&G officials to extract guarantees about the level of treatment to be accorded to anadromous streams failed to generate the hoped for response.<sup>8</sup>

On 1 February, Exxon again agreed to fund the National Oceanic and Atmospheric Administration (NOAA) winter shoreline survey activities as precursors to the MAYSAP surveys.<sup>9</sup> In late February, state OSC Piper recommended to ADEC Commissioner Sandor that the state approve the use of bioremediation in the cleanup, as it had done in previous years. He counseled, however, that the state should emphasize the "where, when and how" of bioremediation application in the 1991 cleanup. The "lessons" he felt the state had learned in its earlier attempts to circumscribe the use of bioremediation are apparent in the detailed discussion that accompanied his recommendation.<sup>10</sup> Mr. Sandor approved the use of bioremediation on 5 March.<sup>11</sup>

Late in February, Rear Admiral Ciancaglini outlined his expectations that the Cultural Technical Advisory Group (CTAG—the group that provided recommendations on the archaeological concerns attending the cleanup) would again be active in serving the TAG process.<sup>12</sup>

In mid-March, NOAA released its status report on Prince William Sound shorelines, with recommendations for the 1991 cleanup. As in 1990, NOAA emphasized the need to strike a balance between the environmental benefits of removing oil and the injury to the environment caused by intrusive cleanup methods. The document warned:

We are rapidly reaching the point of diminishing returns where the amount of effort, and the associated impacts, required to further reduce the total amount of oil remaining...cannot be justified based solely on the assumption that the presence of oil poses a threat to the overall health of the local environment.<sup>13</sup>

The NOAA report generally saw little significant environmental risk from much of the oil that remained in the environment, whether on the surface in the form of coatings or staining, asphalt pavements, mousse, tarballs or tar patties, or in the subsurface,

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6. Rear Adm. D. E. Ciancaglini, letter to L. Paul (FS, Juneau), 11 Jan. 1991, no. F54; and P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 24 Jan. 1991, no. F431, FOSC Exxon Valdez Archive.

7. R. C. Harrelson et al. (Exxon), memorandum to file, 25 Jan. 1991, no. F637, FOSC Exxon Valdez Archive.

8. M. Kuwada (ADF&G), letter to Comdr. E. Page, 4 Feb. 1991, no. F633; and Comdr. E. Page, letter to M. Kuwada, 13 Feb. 1991, no. F634, FOSC Exxon Valdez Archive.

9. O. Harrison (Exxon), letter to B. Barb (NOAA), 1 Feb. 1991, no. F548, FOSC Exxon Valdez Archive.

10. E. Piper (ADEC), memorandum to J. Sandor (ADEC), 27 Feb. 1991, no. F417, FOSC Exxon Valdez Archive.

11. J. Sandor (ADEC), letter to Rear Adm. D. E. Ciancaglini, 5 Mar. 1991, no. F283, FOSC Exxon Valdez Archive.

12. Rear Adm. D. E. Ciancaglini, letter to M. Barton (FS), 28 Feb. 1991, no. F636, FOSC Exxon Valdez Archive.

13. D. Kennedy (NOAA), letter to Rear Adm. D. E. Ciancaglini, 15 Mar. 1991, no. F119, FOSC Exxon Valdez Archive.

when it was below the depth of sediment reworking. The diminished toxicity of the oil due to weathering, or due to its isolation from the biota when buried to sufficient depth, were the primary bases for these findings. The National Oceanic and Atmospheric Administration monitoring studies had indicated that even where intertidal organisms were in direct contact with weathered surface oil, they had still shown extensive recovery.

The NOAA report suggested that the remaining concerns for oil toxicity were concentrated in relatively few environments, particularly subsistence harvest areas and anadromous streams. Its treatment recommendations were generally modest: Only where medium or high oil residue or pooled oil was present (MOR, HOR, or OP in the vernacular of the cleanup), and in continuous surface to subsurface distribution, was tilling (followed by bioremediation) justified. With respect to bioremediation, an EPA-sponsored workshop held in Las Vegas earlier in the year had revealed that natural biodegradation rates in Prince William Sound were high, rendering the enhancement caused by bioremediation statistically indistinguishable in many cases, the report suggested.<sup>14</sup> The Alaska Department of Environmental Conservation now agreed with NOAA that it made sense to leave much of the remaining subsurface oil in place.<sup>15</sup>

The National Oceanic and Atmospheric Administration's conclusions with respect to bioremediation influenced ADEC to place new procedural conditions on bioremediation approval. Exxon was now required to submit a written request to the FOSC for the use of Inipol and Customblen, and to provide details on its proposed operating guidelines.<sup>16</sup> Moreover, a proposal made by Exxon at the 7 March Operations Steering Committee meeting, that it significantly increase the application rates for bioremediation fertilizers in 1991, was rejected by ADEC as incompatible with the conclusions reached at the Las Vegas workshop.<sup>17</sup> Rear Admiral Ciancaglini responded by stating that he would "advise Exxon that proposed changes to the bioremediation program must be submitted to ensure a timely FOSC and State OSC review."<sup>18</sup>

Through the remainder of March, the FOSC continued to assemble the list of sites to be included in the MAYSAP survey, with input from a variety of organizations. A TAG meeting to consider the details of the MAYSAP survey was scheduled for 9 April.

On 6 April, Exxon submitted its formal request to the FOSC with respect to conduct of the MAYSAP program to come.<sup>19</sup> The settlement agreement, although later rejected, had been published in the Federal Register on 19 March. As a result, Mr. Harrison's letter took a significant departure from previous correspondence regarding operational planning for the shoreline cleanup. It contained cost estimates for the MAYSAP program, stated a justification for the program in terms of its environmental benefits,

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14. *Ibid.* These findings are also discussed in chapter 10, "Bioremediation."

15. E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 11 Mar. 1991, no. F121, FOSC Exxon Valdez Archive.

16. *Ibid.*

17. *Ibid.*

18. Rear Adm. D. E. Ciancaglini, letter to E. Piper (ADEC), 29 Mar. 1991, no. F122, FOSC Exxon Valdez Archive.

19. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 6 Apr. 1991, no. F350, FOSC Exxon Valdez Archive.

and requested approval for the costs to be incurred.<sup>20</sup> The ramifications of these new cost control powers, which remained in place in spite of the later rejection of the March settlement agreement, received considerable discussion at federal agency meetings sponsored by the FOSC in Anchorage on 10–11 April.<sup>21</sup>

As the scheduled startup date for the MAYSAP survey approached, considerable efforts were undertaken to refine the list of sites to be visited. Many agencies, both federal and state, suggested segments they felt could be safely deleted. Relatively less often, segments were added to the survey list. On 22 April, Rear Admiral Ciancaglini approved the MAYSAP program as it then stood.<sup>22</sup> Both the number of segments to be visited, and the level of support equipment, had been reduced. In anticipation that a final settlement agreement would soon be consummated, and noting that the cost control powers accorded to the FOSC were now akin to those he would have had in a “federalized” response, Rear Admiral Ciancaglini requested that Exxon develop a work tracking system that could be used to explain deviations of actual costs from budgeted costs.

In the name of cost control apparently, an ADEC request for a vessel and helicopter to support its own efforts in the 1991 surveys and cleanup was rejected. This appears to have induced ADEC to acquire its own support resources via direct contract, and to undertake a cleanup of its own in parallel with that taking place under the aegis of the FOSC.<sup>23</sup>

A detailed MAYSAP survey implementation plan was released by Exxon on 1 May.<sup>24</sup> While the MAYSAP program got underway in fairly smooth fashion in May, there were sticking points in other areas: approval of bioremediation, and the decision process for dealing with bald eagle constraints as both the spring surveys and shoreline cleanup went forward.<sup>25</sup>

On 1 May, the FOSC approved the costs of a bald eagle nest survey, to be conducted by FWS in conjunction with MAYSAP.<sup>26</sup> The next day the FWS deputy regional director advised Otto Harrison that site-specific constraints similar to those imposed in 1990 would again be in place around active bald eagle nests. The requirements were not as flexible as those that were in effect at the end of the previous year, but flexibility was

20. Ibid. The entire survey program was projected to cost \$22.8 million. Subsequent correspondence reveals adjustments to the program’s design, apparently instigated by Rear Admiral Ciancaglini, to cut the costs of the program. Prior to the settlement agreement, evidence of attempts to control the costs of the response effort is virtually absent in the archive material reviewed for this report. Other documents suggest that there was considerable Coast Guard scrutiny of Exxon MAYSAP budget projections (Rear Adm. D. E. Ciancaglini, facsimile to Adm. Sipes [Office of the Commandant, G-M], 16 Apr. 1991, no. F610, FOSC Exxon Valdez Archive).

21. USCG, “Federal Agency Meeting,” 11 Apr. 1991, no. F496; and USCG, “FOSC Anchorage AK Meeting,” 10–11 Apr. 1991, no. F150, FOSC Exxon Valdez Archive.

22. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 22 Apr. 1991, no. F612, FOSC Exxon Valdez Archive.

23. Comdr. E. Page, memorandum to Rear Adm. D. E. Ciancaglini, 27 Apr. 1991, no. F630, FOSC Exxon Valdez Archive. These assets were in addition to one helicopter and one vessel approved for ADEC use in the MAYSAP survey. Otto Harrison felt the ADEC stated intent to undertake long-term monitoring of subsurface oil was outside the scope of the support provisions of the settlement agreement (O. Harrison [Exxon], letter to J. Sandor [ADEC], 29 Apr. 1991, no. F225, FOSC Exxon Valdez Archive).

24. Exxon, “MAYSAP Survey May Shoreline Assessment Program,” 1991, no. F58, FOSC Exxon Valdez Archive.

25. Bioremediation approval in 1991 is covered in chapter 10, “Bioremediation.”

26. Comdr. E. Page, letter to P. Gates (DOI), 1 May 1991, no. F235; and Comdr. E. Page, letter to O. Harrison (Exxon), 1 May 1991, no. F234, FOSC Exxon Valdez Archive.

promised as the status of particular nests was ascertained by the FWS field monitors who would be present while survey and cleanup work took place. The letter warned, however, that activities resulting in the disturbance of nesting eagles constituted "takings" under the Bald Eagle Protection Act (16 U.S.C., sec. 668), and that on scene FWS personnel were empowered to suspend operations when they felt such action to be warranted.<sup>27</sup>

Unlike in previous years, a system evolved in 1991 whereby each approach to an active nest, whether by workers on foot or by helicopter operations, had to have written authorization from FWS. But the vast scope and rapid pace of the MAYSAP surveys meant that most of the authorizations came after-the-fact.<sup>28</sup> The process was soon seen as unacceptably cumbersome by all parties; in effect one agency of the federal government was simply acknowledging after-the-fact the knowing "takings" of eagles by another.<sup>29</sup> It was decided that a permitting process was needed instead, though heretofore the FWS appears not to have ever dealt with bald eagle disturbance problems in quite this way.<sup>30</sup>

While this was going on, the Coast Guard was struggling to define its own "protocols" for the eagle-disturbing activities it was in effect authorizing on a daily basis.<sup>31</sup> Soon Rear Admiral Ciancaglini was formally requesting from U.S. Department of Interior (DOI) a permit to "disturb bald eagles in the course of our work."<sup>32</sup> Nearly simultaneously, DOI was requesting from Rear Admiral Ciancaglini ever greater levels of financial support for the FWS monitoring of the eagle disturbances MAYSAP was causing.<sup>33</sup> Late in May, a federal fish and wildlife permit was issued to Rear Admiral Ciancaglini, for the purpose of "eagle scientific collecting."<sup>34</sup>

Thus the matter was resolved, but Exxon survey crew leaders complained that seventeen of the subdivision surveys they had been assigned were incomplete because of problems that could not be overcome related to the presence of active eagle nests.<sup>35</sup>

## CLEANUP OPERATIONS IN 1991

In mid-May, TAG approved a package of twenty shoreline subdivisions for additional cleanup. Otto Harrison requested approval for an estimated \$3 million to conduct the work.<sup>36</sup> The "1991 General Operations Plan" was released by Exxon on 21 May. The plan once again attracted considerable negative commentary from agency reviewers.

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27. R. W. Gould (FWS, Anchorage), letter to O. Harrison (Exxon), 2 May 1991, no. F521, FOSC Exxon Valdez Archive.

28. J. Parker (FWS), letter to D. Nore (JTOC), 14 May 1991, no. F67, FOSC Exxon Valdez Archive. This letter provides a typical example of the approval process that evolved.

29. The other agency was the U.S. Coast Guard, which by virtue of its new budgetary control over Exxon activities, was seen as knowingly authorizing eagle disturbances by FWS.

30. J. Parker (FWS), internal correspondence to Ed [sic], 17 May 1991, no. F68, FOSC Exxon Valdez Archive. This informal memo plus marginalia indicates a groping toward a solution to the problem that was being encountered.

31. Comdr. E. Page, memorandum to distribution, 17 May 1991, no. F204, FOSC Exxon Valdez Archive.

32. Rear Adm. D. E. Ciancaglini, letter to P. Gates (DOI), 20 May 1991, no. F258, FOSC Exxon Valdez Archive.

33. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 20 May 1991, no. F263, FOSC Exxon Valdez Archive.

34. FWS, "Federal Fish and Wildlife Permit PRT-759314," 24 May 1991, no. F69, FOSC Exxon Valdez Archive.

35. L. C. Dash and W. T. Kelley (Exxon), memorandum to A. Teal (Exxon), 7 June 1991, no. F520, FOSC Exxon Valdez Archive.

36. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 17 May 1991, no. F238, FOSC Exxon Valdez Archive. One other problematic subdivision on Seal Island (SE-41A) was given early approval.

This time it was not the operational assumptions that were at issue so much as the “rosy” view of the state of recovery in the response area that Exxon articulated in the plan.<sup>37</sup> Those of a more conspiratorial bent felt that Exxon had deliberately “seeded” the plan with its own outlook in a veiled attempt to get others to buy into its view through simply agreeing to operate under the plan’s framework.<sup>38</sup>

Coast Guard Headquarters was led to review the plan thoroughly, and agreed with Rear Admiral Ciancaglini that his letter of approval should state explicitly that the plan contains “unsupported conclusions regarding the state of prevailing conditions in Prince William Sound and Western Alaska.”<sup>39</sup> Headquarters also counseled that, with the end of the response now in sight, phrasing suggesting that “the cleanup is complete” should be avoided in favor of language stating simply that “all the current requirements have been met.”<sup>40</sup> Rear Admiral Ciancaglini approved the plan on 7 June, including a long list of caveats in his approval letter.<sup>41</sup>

On 22 May, correspondence from Otto Harrison to Rear Admiral Ciancaglini indicated that Exxon was well on the way to receiving the land manager access permits it needed to resume cleanup operations.<sup>42</sup> Otto Harrison also wrote to John Sandor, complaining that a pattern had developed in the on-going shoreline surveys in which state representatives consistently made treatment recommendations that differed dramatically from those made by other members (Coast Guard, NOAA, and Exxon) of the survey teams.<sup>43</sup>

Also on 22 May, Mr. Harrison requested approval for the costs of treating a second group of twenty shoreline subdivisions approved by TAG.<sup>44</sup> A 27 May MAYSAP progress report indicated that 552 subdivisions had now been surveyed (424 in Prince William Sound, 128 in the Gulf of Alaska). By 20 May, cleanup crews from Chenega Village were at work cleaning up shorelines on their lands, under contract to Exxon.<sup>45</sup>

In early June, state OSC Piper submitted to Rear Admiral Ciancaglini an initial list of subdivisions (more than forty in all) on which the state expected to conduct its own simple manual cleanup operations following state-sponsored surveys. This independent state work was made possible as a result of the state’s decision to acquire its own support resources. Coordination with the federally directed work was promised, and Mr. Piper left open the possibility that, if the state surveys revealed that

37. P. Gates (DOI), to Rear Adm. D. E. Ciancaglini, 3 June 1991, no. F266; and E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 3 June 1991, no. F248, FOSC Exxon Valdez Archive. Comdr. Page was led to warn Coast Guard Headquarters of the widespread local criticism of Exxon’s views: “Their comments are too rosy!” he wrote (Comdr. E. Page, memorandum to Capt. B. Holt, 5 June 1991, no. F385, FOSC Exxon Valdez Archive).

38. C. Wohlforth, “State Takes Exxon to Task in Letter to Coast Guard,” *Anchorage Daily News*, 5 June 1991.

39. Commandant, memorandum to FOSC, 7 June 1991, no. F384, FOSC Exxon Valdez Archive.

40. *Ibid.* The intent seemed to be to avoid rendering an unequivocal determination of “removal completeness” as defined by USCG, “Marine Safety Manual,” Commandant Instruction no. vol. 6, ch. 7.

41. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 7 June 1991, no. F249, FOSC Exxon Valdez Archive.

42. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 22 May 1991, no. F377, FOSC Exxon Valdez Archive.

43. O. Harrison (Exxon), letter to J. Sandor (ADEC), 21 May 1991, no. F359, FOSC Exxon Valdez Archive.

44. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 22 May 1991, no. F376, FOSC Exxon Valdez Archive.

45. G. Evanoff (Chenega Village Corporation), letter to O. Harrison (Exxon), 20 May 1991, no. F358, FOSC Exxon Valdez Archive.



more work than anticipated was necessary, the state might require Exxon to conduct the work under state authority.<sup>46</sup>

Rear Admiral Ciancaglini said he had no objection to the state-sponsored work, hoping there would be close liaison between the two efforts and that the need for independent cleanup operations would be minimized.<sup>47</sup> Exxon requested approval for the costs of treating a third group of thirty-two TAG-approved subdivisions on 6 June,<sup>48</sup> and for a fourth group of thirty-five subdivisions on 12 June.<sup>49</sup> Exxon was now also expressing a willingness to treat some of the segments the state had targeted in its own cleanup, requiring the FOSC to notify land owners that land access not previously requested might now be required.<sup>50</sup>

In mid-June, Exxon gave an early indication of its intentions for 1992, announcing that it would keep a small staff in its Anchorage offices through mid-September and would have staff available in the spring of 1992.<sup>51</sup> A 20 June status report issued by the FOSC showed that TAG had to this point made recommendations on 573 subdivisions (of 584 surveyed by MAYSAP), recommending treatment on 143 of them.<sup>52</sup> It was anticipated that the cleanup then in progress would be complete by mid-July. The FOSC released his "1991 Transition Plan" on 2 July.

By 23 June, FWS had completed its final surveys of the eagle nesting status on shorelines subject to cleaning, and announced it would be willing once again to relax the bald eagle constraints as it had in 1990, effective 10 July.<sup>53</sup> Exxon submitted its final list of ten TAG-approved subdivisions for cost approval on 12 July.<sup>54</sup> Exxon also released a comprehensive report on the status of subsurface oiling, based on MAYSAP survey data, on 12 July.<sup>55</sup> The complete list of subdivisions which would require bioremediation applications was released by Exxon on 13 July.<sup>56</sup>

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46. E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 3 June 1991, no. F275, FOSC Exxon Valdez Archive. The subdivisions the state was targeting were selected from those that had passed through TAG with NTR recommendations (Lt. T. M. Murphy, memorandum to Coast Guard monitors, 13 June 1991, no. F448, FOSC Exxon Valdez Archive). The state was not simply refusing to give up on the idea of more and more shoreline treatment, as the state was also recommending that many other subdivisions scheduled for reassessment did not in fact require it (J. Bauer [ADEC], letter to Comdr. E. Page, 12 June 1991, no. F195, FOSC Exxon Valdez Archive). The RRT granted approval for inclusion of the state-sponsored cleanup under the ACOE nationwide permit on 10 June (Capt. D. Bodron, memorandum to state OSC, 10 June 1991, no. F280, FOSC Exxon Valdez Archive).

47. Rear Adm. D. E. Ciancaglini, letter to E. Piper (ADEC), 8 June 1991, no. F197, FOSC Exxon Valdez Archive.

48. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 6 June 1991, no. F383, FOSC Exxon Valdez Archive.

49. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 12 June 1991, no. F232, FOSC Exxon Valdez Archive.

50. Rear Adm. D. E. Ciancaglini, letter to G. Evanoff (Chenega Village Corporation), 14 June 1991, no. F438; and Comdr. E. Page, letter to O. Harrison (Exxon), 14 June 1991, no. F437, FOSC Exxon Valdez Archive.

51. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 13 June 1991, no. F517, FOSC Exxon Valdez Archive.

52. USCG, "1991 FOSC Operations Fact Sheet," 20 June 1991, no. F516, FOSC Exxon Valdez Archive.

53. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 3 July 1991, no. F400, FOSC Exxon Valdez Archive.

54. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 12 July 1991, no. F423, FOSC Exxon Valdez Archive. This time Exxon contested a portion of the costs, as Rear Adm. Ciancaglini had required, at the behest of the state and land managers, the cleanup of eight subdivisions for which the TAG had recommended NTR. Rear Adm. Ciancaglini stuck to his guns (Rear Adm. D. E. Ciancaglini, letter to O. Harrison [Exxon], 17 July 1991, no. F403, FOSC Exxon Valdez Archive).

55. R. L. Mastracchio (Exxon), letter to Rear Adm. D. E. Ciancaglini, 12 July 1991, no. F112, FOSC Exxon Valdez Archive.

56. P. C. Madden (Exxon), memorandum to R. L. Mastracchio (Exxon), 13 July 1991, no. F135, FOSC Exxon Valdez Archive.

On 15 July Rear Admiral Ciancaglini wrote to the mayors of communities affected by the spill.<sup>57</sup> He outlined the status of the cleanup and his plans for the remainder of this year and the next. Fifty-seven sites would continue to receive repeated bioremediation applications into September. In addition, though he planned to return to Juneau (where he continued to serve as 17th Coast Guard District commander), Rear Admiral Ciancaglini expected to remain the FOSC "until at least the summer of 1992."<sup>58</sup>

On 29 August, Otto Harrison informed the Coast Guard that all bioremediation applications had been completed, and debris generated by state-sponsored cleanup programs had been picked up by Exxon crews.<sup>59</sup> Exxon's 15 August release of its "1991 Work Program Status and Continuing Programs" report produced a "generally satisfied" response from ADEC, particularly with respect to the high degree of coordination that had been achieved between the federal and state response efforts.<sup>60</sup>

Earlier in the year, NOAA had released a comprehensive study suggesting that hot-water washing had retarded the recovery of the marine intertidal biota at several study sites.<sup>61</sup> The study had attracted considerable interest.<sup>62</sup> Although a collective backing away from hot-water washing had been going on for some time, the study stopped short of outright condemnation of the procedure in all cases. The National Oceanic and Atmospheric Administration now felt the need to caution that ongoing studies it was conducting could be expected to define more precisely the parameters of beneficial use of hot-water washing and other shoreline treatment techniques.<sup>63</sup>

In November, the state announced its plans to conduct a spring, 1992 survey of sixty to sixty-five shoreline subdivisions.<sup>64</sup> Rear Admiral Ciancaglini was generally supportive of the state's proposal, and tentatively scheduled a January 1992 meeting in Juneau to discuss the operational program for 1992.<sup>65</sup> In late November, the FOSC released a draft planning document on 1992 shoreline surveys.<sup>66</sup> A two-survey-team effort was contemplated, with Coast Guard, ADEC, Exxon, and NOAA joint participation. Treatment would be limited to manual tilling, relocation, and removal unless there was mutual Coast Guard-ADEC agreement that more work was needed.

In December, Exxon's 15 August "1991 Work Program Status and Continuing Programs," was approved by Rear Admiral Ciancaglini.<sup>67</sup> In his approval letter Rear Admiral Ciancaglini emphasized that Exxon should not conclude prematurely that the cleanup is complete.

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57. Rear Adm. D. E. Ciancaglini, letter to D. Gilman (mayor, Kenai Peninsula Borough), 15 July 1991, no. F82, FOSC Exxon Valdez Archive.

58. *Ibid.*

59. O. Harrison (Exxon), letter to Comdr. D. Maguire, 29 August 1991, no. F57, FOSC Exxon Valdez Archive.

60. E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 18 Sept. 1991, no. F98, FOSC Exxon Valdez Archive.

61. NOAA, "Evaluation of the Condition of the Intertidal and Shallow Subtidal Biota in Prince William Sound following the Exxon Valdez Oil Spill and Subsequent Shoreline Treatment," Mar. 1991, vol. 1, report no. HMRB 91-1.

62. D. Kennedy (NOAA), letter to Rear Adm. D. E. Ciancaglini, 8 Oct. 1991, no. F138, FOSC Exxon Valdez Archive.

63. *Ibid.*

64. E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 5 Nov. 1991, no. F140, FOSC Exxon Valdez Archive.

65. Rear Adm. D. E. Ciancaglini, letter to E. Piper (ADEC), 14 Nov. 1991, no. F471, FOSC Exxon Valdez Archive.

66. USCG, "1992 Beach Assessment Plan" (draft, 26 Nov. 1991), no. F476, FOSC Exxon Valdez Archive.

67. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 9 Dec. 1991, no. F467, FOSC Exxon Valdez Archive.

## OVERVIEW OF SHORELINE CLEANUP IN 1992

The 1992 cleanup proved to be one of low-key and highly cooperative efforts that provided a transition from response to restoration. The completion of the settlement agreement in late 1991 paved the way for the Trustee Council to replace the FOSC as the central governmental authority in the *Exxon Valdez* incident. The Final Shoreline Assessment Program (FINSAP), a small-scale combined shoreline assessment and cleanup effort, completed its field activities on 5 June. On 10 June the final Coast Guard pollution report (Polrep) was sent, declaring the T/V *Exxon Valdez* case closed.

The approaching transition from response to restoration inevitably raised questions about the difference between the two. The continued presence of oiled mussel beds in widely scattered areas emerged as the issue which most clearly spoke to this question in the *Exxon Valdez* response. The winding down of the response effort and the transition to the Prince William Sound Restoration Plan are the subjects of this section.

### THE 1992 CLEANUP

A 22 January planning meeting held at Coast Guard headquarters in Juneau set the basic agenda for the 1992 response.<sup>68</sup> The objective of all parties present was to bring the response to conclusion. A basic list of about sixty survey sites was agreed to, subject to final inputs from the agencies. NOAA's Dave Kennedy stated that his agency's advice continued to be as it was in 1991.<sup>69</sup> He reported that an ongoing NOAA storm berm relocation study was pointing to findings that the technique had indeed been successful. He also said that a "remarkable" recovery of oiled areas was occurring. The expectation was that most cleanup to be done would be of the "shovel and scatter" variety, in tandem with the use of bioremediation agents. With the TAG agencies all represented on the survey vessels, it was expected that the TAG function could be performed in the field.<sup>70</sup> There was general agreement on all points.

Out of this meeting came plans to employ two vessel-based teams to assess sixty-four sites at an estimated cost of \$3 million.<sup>71</sup>

The oiled mussel bed issue had an initial airing in January. On the advice of NOAA, the FOSC had been avoiding disruption to mussel beds in the cleanup since 1989.<sup>72</sup> The FOSC felt that the "inconclusive" nature of the natural resource damage assessment

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68. USCG, "Spring-Summer 92 Planning Meeting," 22 Jan. 1992, no. F316, FOSC Exxon Valdez Archive.

69. The NOAA 1992 status report is contained in, J. Talbott (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 22 Apr. 1992, no. F830, FOSC Exxon Valdez Archive. The only specific concern noted was with subsistence shellfish harvest areas. Concentrations of hydrocarbon contaminants at the most contaminated site, Windy Bay, were reported to have declined by two orders of magnitude since 1989, and the health risk associated with consumption was considered to be low. NOAA's basic advice was to avoid treatment that might release oil at the site, and avoid bioremediation, which had consistently raised concerns by local Native harvesters. With respect to subsurface oil removal, the report stated:

As the "pockets" of subsurface oil become smaller and more discontinuous with each passing year the overriding concern must shift to minimizing the disturbance to the ecosystem as a whole. Reworking of beach sediments, either manually or mechanically, may increase the availability, and therefore the toxicity, of the oil to the surrounding biological community thereby reducing the benefit of treatment.

70. USCG, "FINSAP 1992 Shoreline Assessment Program," Mar. 1992, no. F285, FOSC Exxon Valdez Archive.

71. Comdr. D. Maguire, memorandum to commandant (G-MEP), 3 Feb. 1992, no. F677, FOSC Exxon Valdez Archive.

72. USCG, "FOSC Policy on Oiled Mussel Beds," 19 Jan. 1992, no. F294, FOSC Exxon Valdez Archive.

(NRDA) findings now available justified a continuation of that policy. The Trustee Council saw the oiled mussel beds as a restoration issue and had authorized an extensive study of oiled mussel beds.<sup>73</sup> The FOSC policy permitted intrusions into mussel beds only for the purpose of collecting survey data.

The mussel bed "restoration" project that the trustees developed appears to have spilled over into the FOSC's domain because of the dual roles of several state agencies as Trustee Council members and as participants in the cleanup.<sup>74</sup> Surveys by state resource agencies had led ADEC and the Alaska Department of Natural Resources (ADNR) to conclude that as many as seventy-five Prince William Sound segments contained oiled mussel beds.<sup>75</sup> The mussel beds were contaminated because they lay in sheltered, fine sediment areas and the presence of the mussels themselves impeded natural oil degradation. The state's October 1991 "Draft Oiled Mussels Policy" included an intention to require treatment of the most heavily oiled mussel beds in 1992. As plans for FINSAP were being laid in 1992, ADNR, ADF&G, and ADEC representatives were advocating that oiled mussel bed treatment be made part of FINSAP.<sup>76</sup>

The FOSC's position, shared by Commissioner Sandor, was that the mussel beds were a restoration issue and therefore not a matter for FINSAP attention.<sup>77</sup> A review of the state's draft oiled mussel policy led NOAA Scientific Support Coordinator Joe Talbott to conclude that the policy statement's suppositions about the benefits of oil removal were speculative.<sup>78</sup> On 14 May, the FOSC reiterated his earlier policy statement on oiled mussel beds.<sup>79</sup> The basic thrust was that intrusions into mussel beds in the name of data collection were justified only in the name of providing the data to the Trustee Council, whose problem to solve the oiled mussel beds now were. This effectively left the matter of the oiled mussel beds where it had stood late in 1991.

The planning document for FINSAP was released on 1 March 1992. (A second document, providing information on implementation details, was released on 8 May.) With FINSAP about to commence, it was now the appropriate time to announce the impending cessation of the response and transition to restoration. With the wide gulf that remained between Exxon and the Trustee Council on conditions in Prince William Sound, however, it was judged that the Coast Guard's interests were best served if its decision to end the response were based solely on its own criteria.<sup>80</sup>

73. Ibid. A 1991 study had concluded that the highest concentrations of oil remaining were to be found in mussels and underlying substrates in some areas of Prince William Sound (NOAA, "Restoration Project Number 103 A, B, C, D," 12 May 1992, no. F291, FOSC Exxon Valdez Archive).

74. The project's concept involved stripping and removal of oiled sections of mussel bed.

75. ADEC, "Draft Oiled Mussels Policy," Oct. 1991, no. F835, FOSC Exxon Valdez Archive.

76. Ibid.

77. Lt. I. Nance, memorandum to Comdr. D. Maguire, 8 May 1992, no. F834, FOSC Exxon Valdez Archive.

78. J. Talbott (NOAA), letter to Rear Adm. D. E. Ciancaglini, 27 April 1992, no. F309, FOSC Exxon Valdez Archive.

79. Comdr. D. Maguire, letter to O. Harrison (Exxon), 14 May 1992, no. F833, FOSC Exxon Valdez Archive.

80. Commandant, memorandum to FOSC, 16 Mar. 1992, no. F314, FOSC Exxon Valdez Archive. Specifically, this meant that the language of section (7)(B)(5) of chapter 7 of the Coast Guard's "Marine Safety Manual" (criteria for determining removal completeness) was operative. The commandant also counseled that the point should be made, in line with positions taken since 1990, that "no net environmental benefit" would result from additional cleanup efforts. "We should be careful not to intimate that the affected areas have been restored to their pre-spill state," he added.

The state again engaged in some modest independent cleanup activities in 1992. These were expected to end on 3 June, subject to determination of the state vessel's role in the mussel bed study.<sup>81</sup> Rear Admiral Ciancaglini approved the FINSAP plan on 18 May.<sup>82</sup>

On 10 June the last Polrep on the *Exxon Valdez* response was produced and the response was officially ended.<sup>83</sup> Rear Admiral Ciancaglini advised CGD 17 in Juneau that they should be prepared to provide operational support to the FOSC who would remain in Anchorage, should that prove necessary.<sup>84</sup> A total of eighty-one sites had been visited by the FINSAP teams operating out of two vessels. Sixty of the sites were treated by the FINSAP teams, and three, requiring more extensive treatment, were treated by the Alaska Native cleanup team that operated out of Chenega Village in Prince William Sound. Eighty-eight tons of oiled sediments were removed from the response area.<sup>85</sup> All cleanup work was complete by 5 June. News media and legislative tours of the response area were conducted under joint sponsorship of ADEC and the Coast Guard on 3, 8, and 9 June.<sup>86</sup>

Rear Admiral Ciancaglini released a letter officially concluding the shoreline cleanup on 10 June 1992.<sup>87</sup> A "1992 Work Program Completion Report" was released by Exxon on 1 August.<sup>88</sup>

A final response update released by the Seventeenth Coast Guard District commander stated:

There is still some oil remaining on the shorelines impacted by the EXXON VALDEZ oil spill. The oil left is generally oil mousse, which is very high in water content, weathered and has lost most of its toxicity. This oil is primarily located in areas protected from the elements, behind rocks and boulders or is below the surface. Algae, mussels, periwinkles and other marine life are recolonizing in strength on these shorelines. Removal of the remaining weathered, generally benign oil, would require invasive cleanup measures which would disrupt the environmental recovery process that is well underway. The consensus and judgment of state and federal agencies involved in the spill response is that additional cleanup would cause unacceptable environmental harm. Accordingly, the FOSC has determined cleanup "complete."<sup>89</sup>

## SUMMARY

With an out-of-court settlement of the civil suit against Exxon increasingly likely, bringing with it the prospects of a new set of restoration-oriented activities for Prince William Sound, 1991 and 1992 proved to be relatively free of controversy. In the case of

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81. Comdr. D. Maguire, letter to S. Mawson (SOSC), 18 May 1992, no. F293, FOSC Exxon Valdez Archive.

82. Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 18 May 1992, no. F831, FOSC Exxon Valdez Archive.

83. USCG Pollution Report P 100130Z June 1992 (PWS Polrep 314), sec. (1)(A).

84. FOSC, memorandum to commander (CGD 17), 10 June 1992, no. F836, FOSC Exxon Valdez Archive.

85. USCG Pollution Report P 100130Z June 1992 (PWS Polrep 314), sec. (1)(A). Exxon later calculated that 11.6 barrels of crude oil residue were removed from the response area in 1992 (O. Harrison [Exxon], letter to Comdr. D. Maguire, 29 June 1992, no. F300, FOSC Exxon Valdez Archive).

86. Ibid.

87. Rear Adm. D. E. Ciancaglini, letter to J. Sandor (ADEC), 10 June 1992, no. F698, FOSC Exxon Valdez Archive.

88. USCG, "1992 Work Program Completion Report," Aug. 1992, no. F692, FOSC Exxon Valdez Archive.

89. Commander (CGD 17), memorandum to commanding officers (MSO Anchorage and Valdez), 16 June 1992, no. F832, FOSC Exxon Valdez Archive.

the state, the newly elected Hickel administration was anxious to put the spill behind it. On the federal side, the FOSC's new preapproval authority provided for the first time the means to orchestrate the entire response effort on the basis of a single set of planning assumptions. The upshot was that a normalization of interagency relations occurred, and the intense political conflict that had marked the response effort's first two years gave way to more stylized and bureaucratic forms of conflict.

The state continued to insist that the federally directed cleanup did not serve well the goals of its own cleanup standards. But now it did so simply by stating the point formally and then demonstrating its commitment to its own standards through selected state-directed cleanups outside the purview of the FOSC. Likewise, the state continued to condition the use of bioremediation in the cleanup, but the FOSC readily agreed to the additional paperwork requirements that the state imposed, and the state's new tack of insisting that the use made of bioremediation be minimized was consistent with the general winding down of the response that was now occurring. With the decision-making arena now virtually emptied of the political conflict of the recent past, merely bureaucratic arguments like that which developed in 1991 between the FOSC and FWS over bald eagle "takings" provided a certain amount of comic relief.

The increasing tendency of on going response-related activities to be judged by the contribution they made to the larger issues now being addressed by the settlement negotiations was well illustrated by the accusations of state and federal agencies that Exxon was using its planning documents to promote its corporate view of the status of Prince William Sound's recovery. The Coast Guard too found it in the interest of the position it represented to choose its words carefully, ultimately abandoning efforts to develop a legal protocol for segment-by-segment sign offs in favor of a simple blanket statement of "removal completeness" that relied on the straightforward criteria of the Coast Guard's own Marine Safety Manual.

Following the end of the 1989 cleanup, the "big picture" advice which NOAA gave the FOSC on the path to follow in continuing the shoreline cleanup effort adhered consistently to a single theme. As time wore on, less and less additional cleanup was justifiable in terms of net environmental benefit, given the effects of weathering and the cleansing that both man and nature had already done. This supported the steady "ratcheting down" in the scope of the overall effort that had been occurring since 1989. In 1992, NOAA issued a strong statement that little if any additional shoreline cleanup work was now justified on net benefit grounds, thereby providing a signal from the scientific community that the cleanup effort could now be concluded with little risk of compromise to the standards of environmental safety it was aimed at promoting.

While NOAA helped define the scientific basis for ending the cleanup, the oiled mussel bed issue illustrates the difficulties that remain in trying to draw a bright line between response and restoration. Although net environmental benefit arguments were put forward that supported taking no action on the mussel beds, the fact that the response agencies shared a mutual desire to end the response, coupled with the active involvement of all but the Coast Guard in planning for the restoration program to

follow, appear to have been major reasons why the decision to leave the oiled mussel beds to the trustees was arrived at so expeditiously.

Perhaps the greatest achievement of 1992 was the bringing of the response to a mutually agreed upon close without rancor among parties who had found so much to disagree about in earlier years. A wide gulf continues to separate Exxon and the trustee agencies over both the extent of the environmental damage caused by the spill and the status of the recovery. But the great success of the four-year shoreline cleanup effort that took place was evident in how little oil remained in Prince William Sound, and in how abundant was the recovery taking place in the intertidal zone at its conclusion.

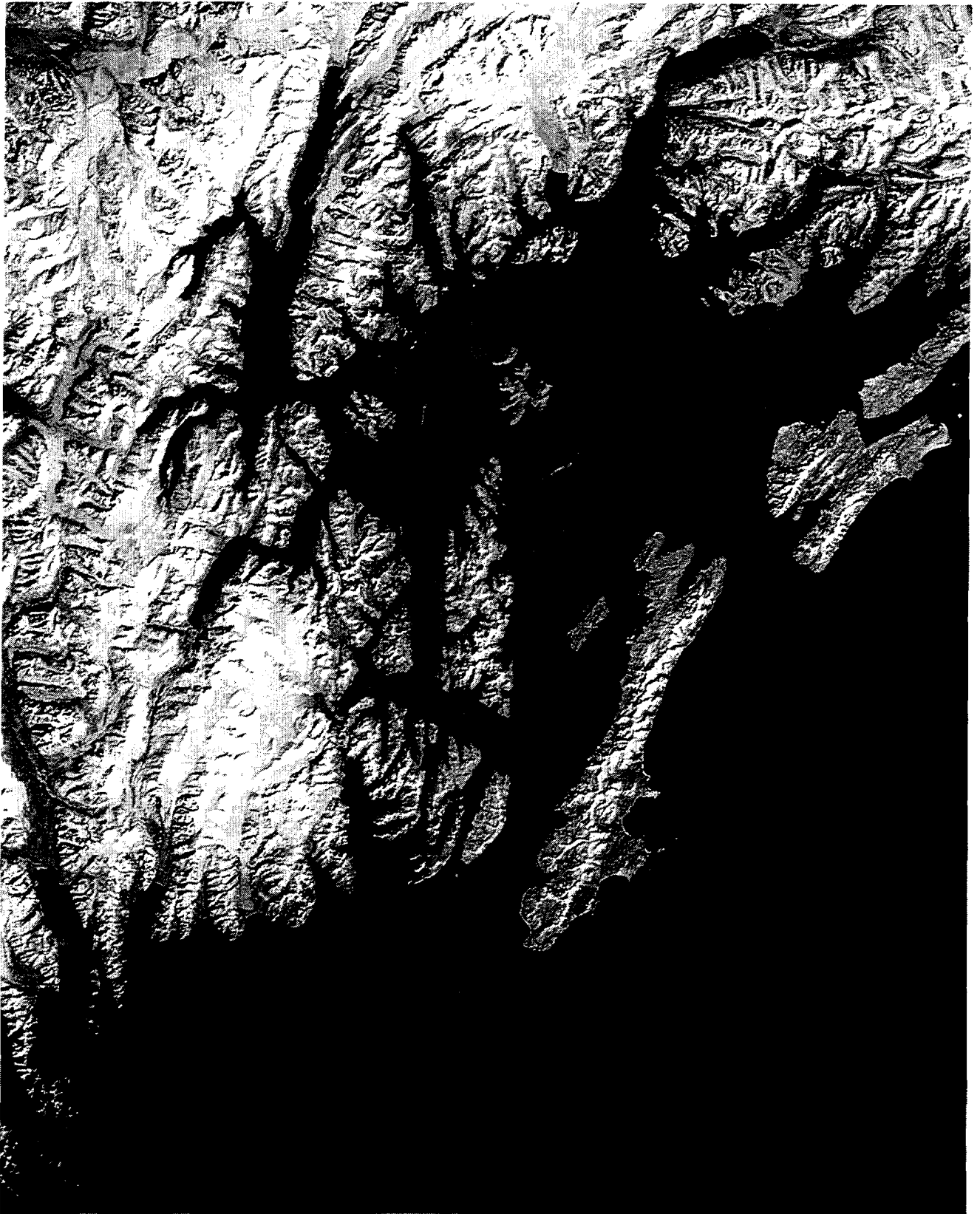
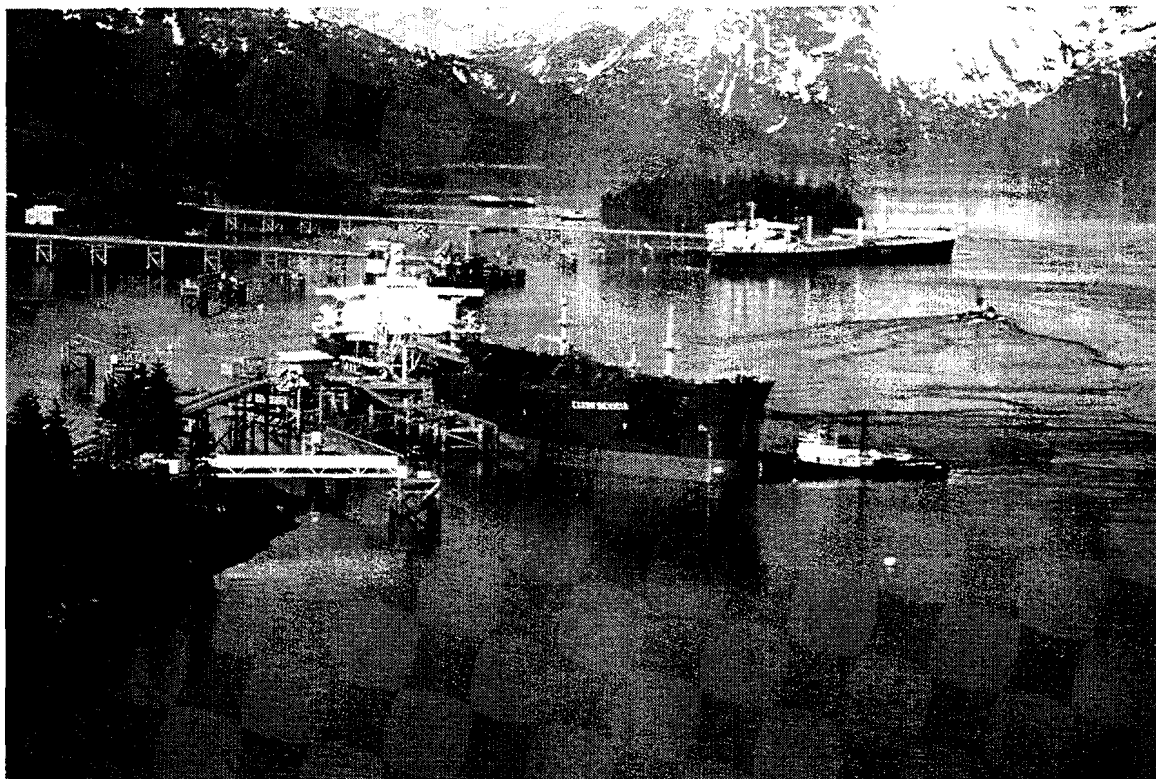
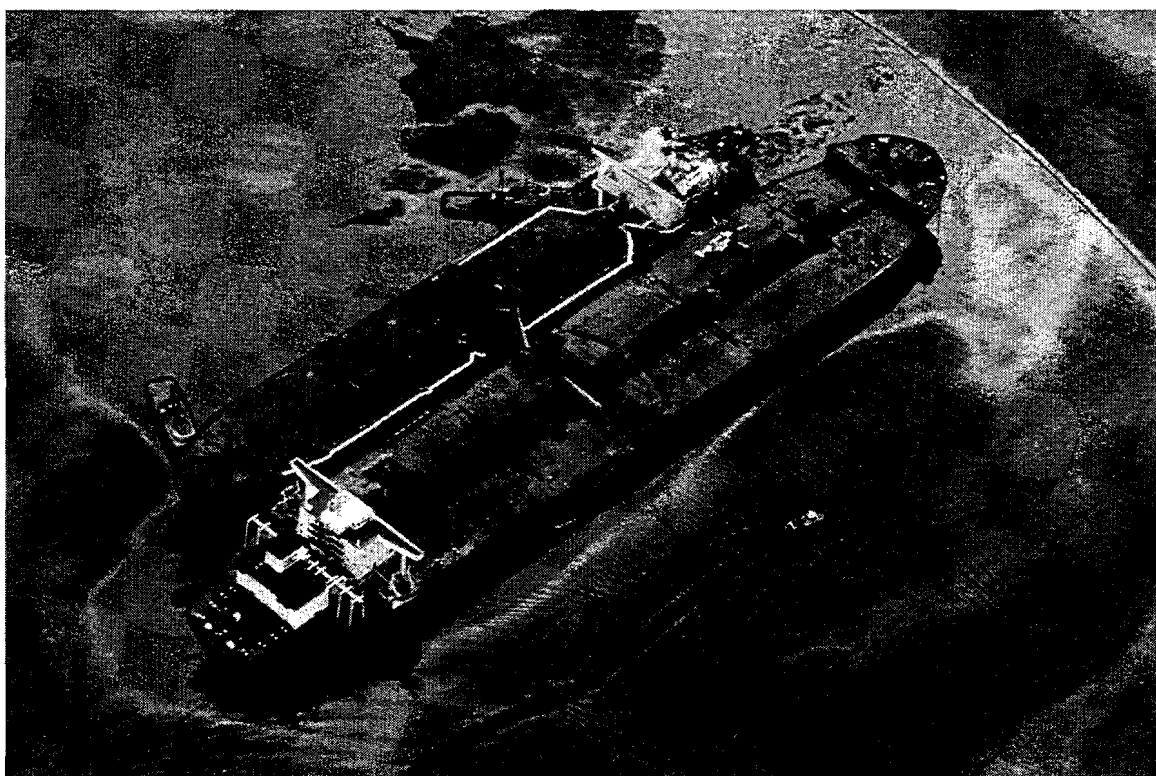


Image of Prince William Sound produced from Landsat satellite thematic mapper data recorded on April 7, 1989.

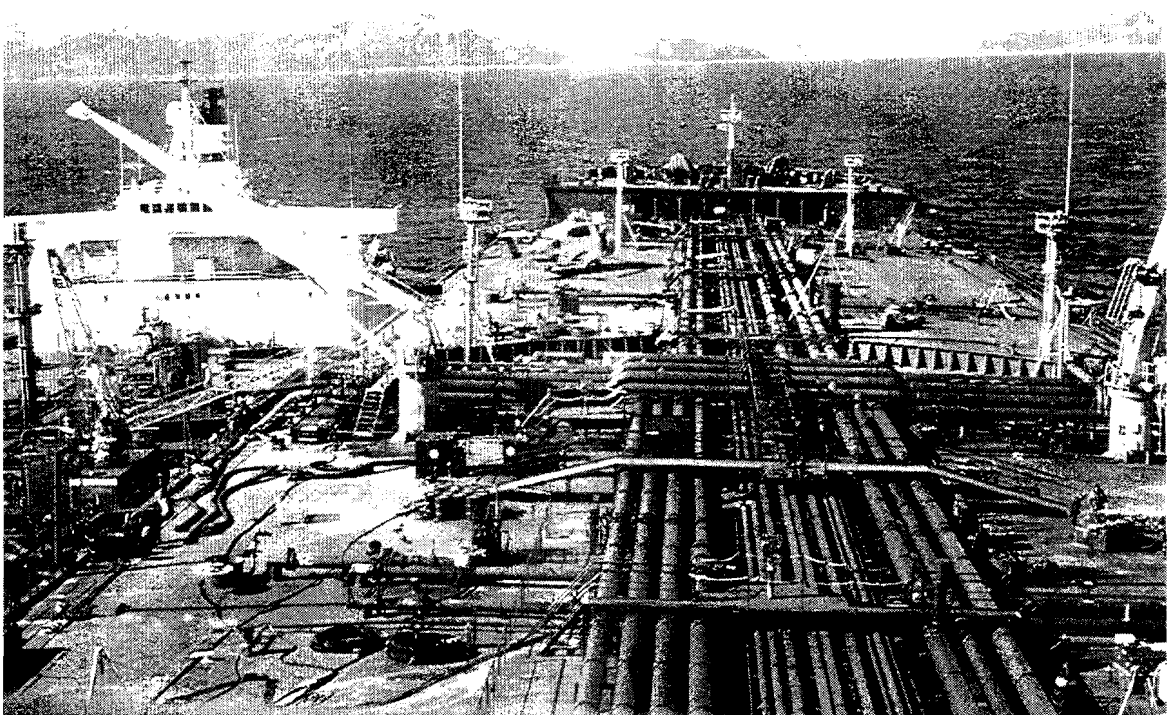




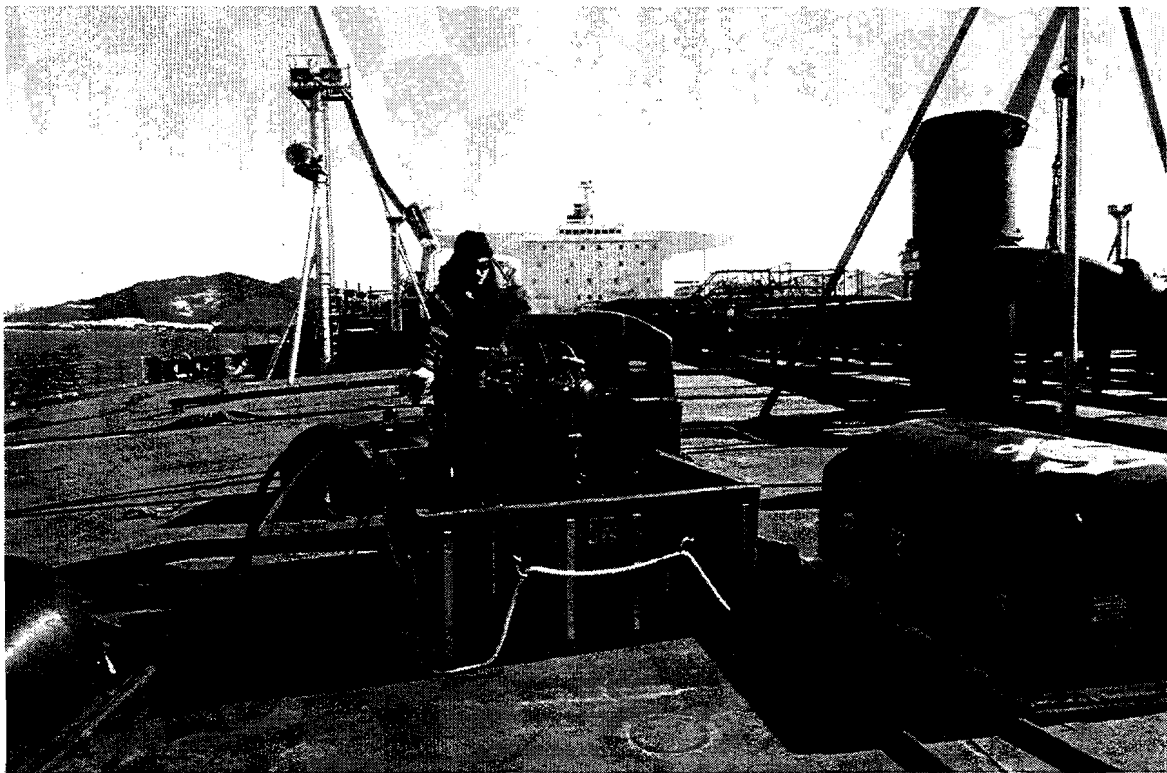
Exxon tanker receiving crude oil at Alyeska Terminal, Valdez, Alaska.



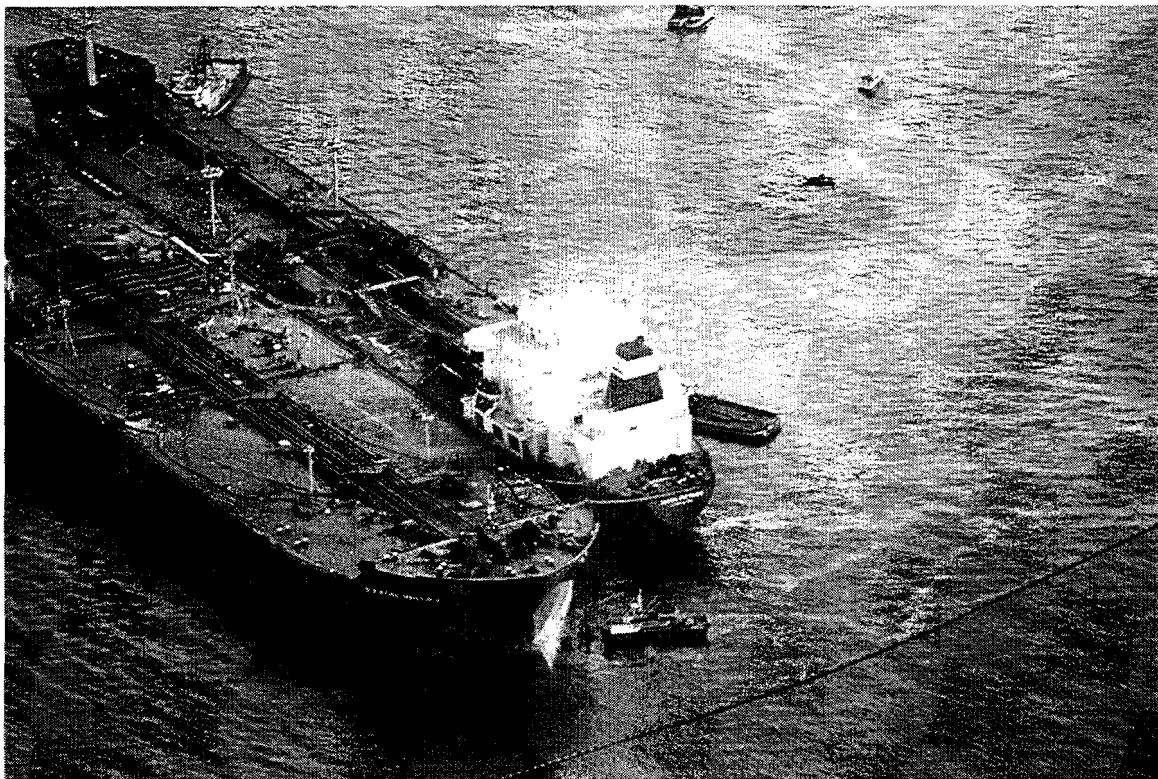
T/V *Exxon Valdez* (larger vessel) aground on Bligh Reef during lightering operations on March 26, 1989.



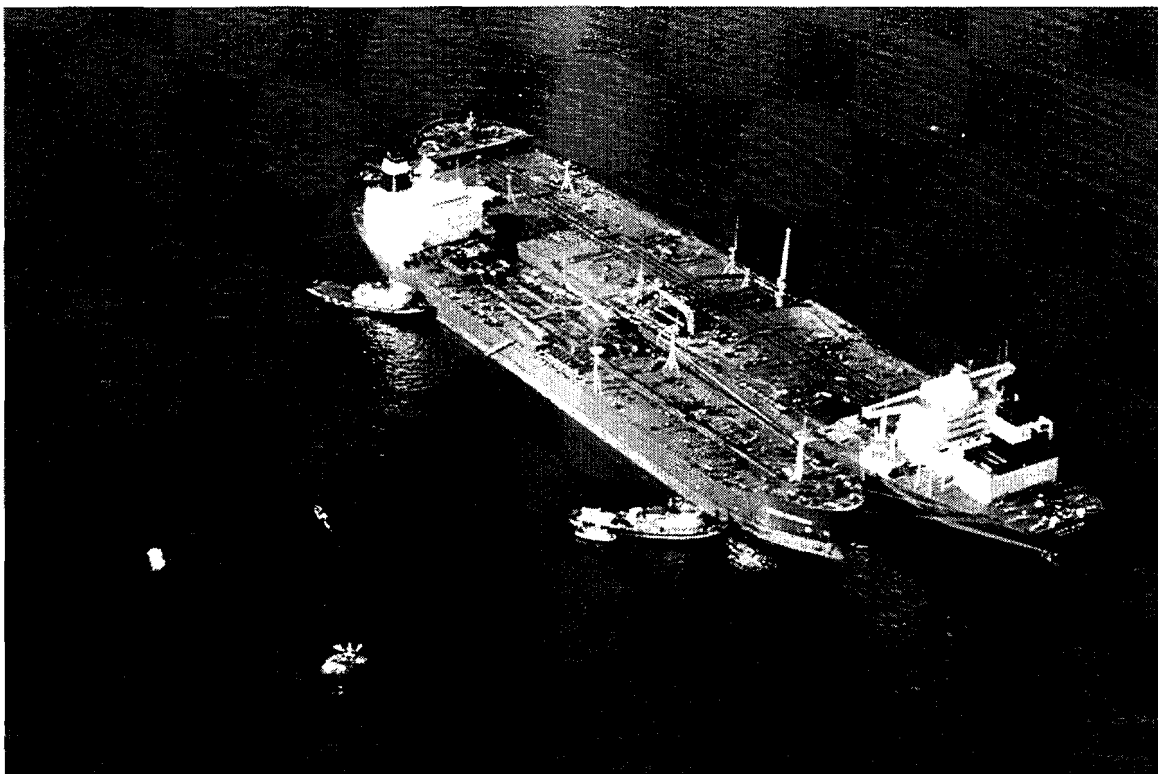
Deck of T/V *Exxon Valdez* from bridge during lightering operations.



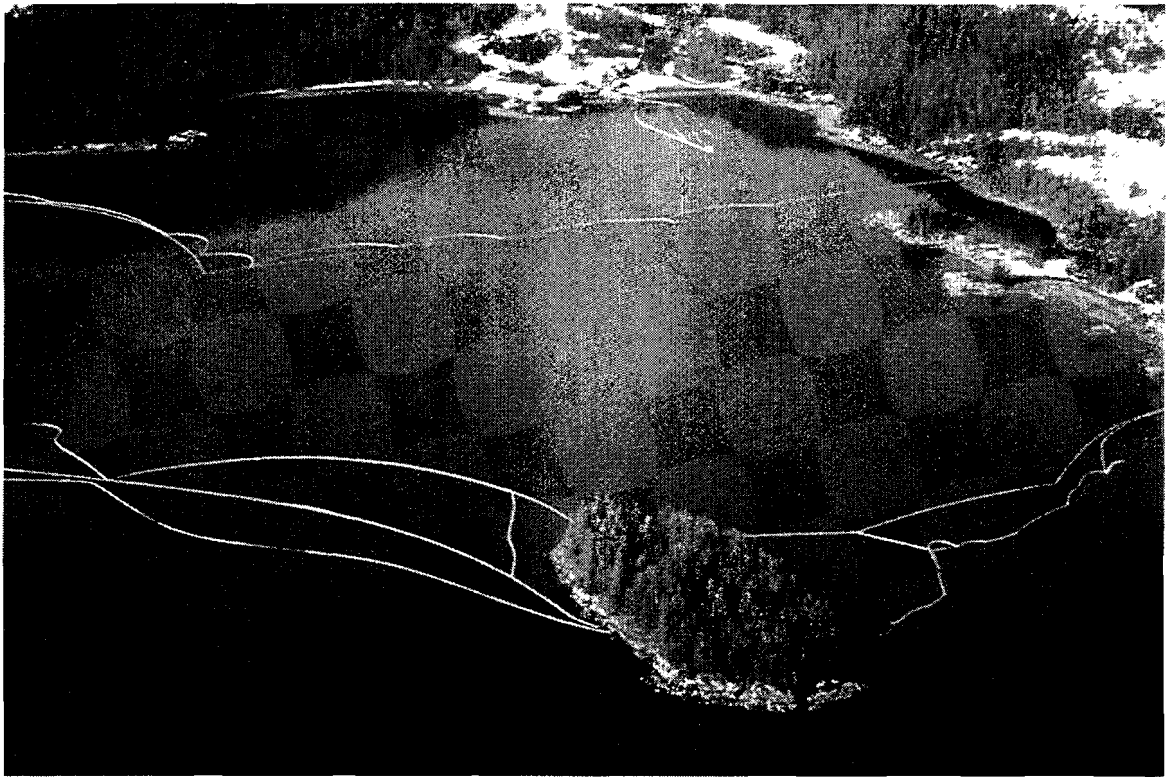
Coast Guard personnel preparing the ADAPTS (Air Deployable Anti-Pollution Transfer Systems) for lightering the T/V *Exxon Valdez*.



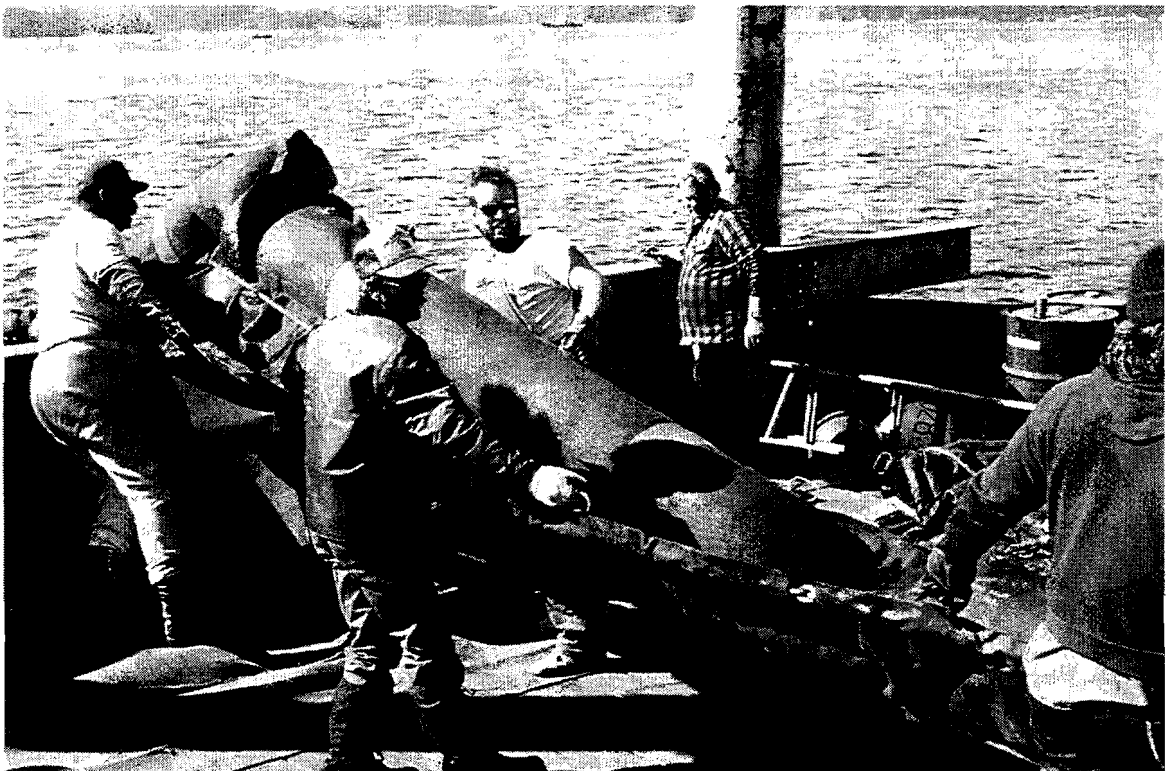
*T/V Exxon Valdez during lightering operations April 2, 1989 with T/V Exxon Baytown.*



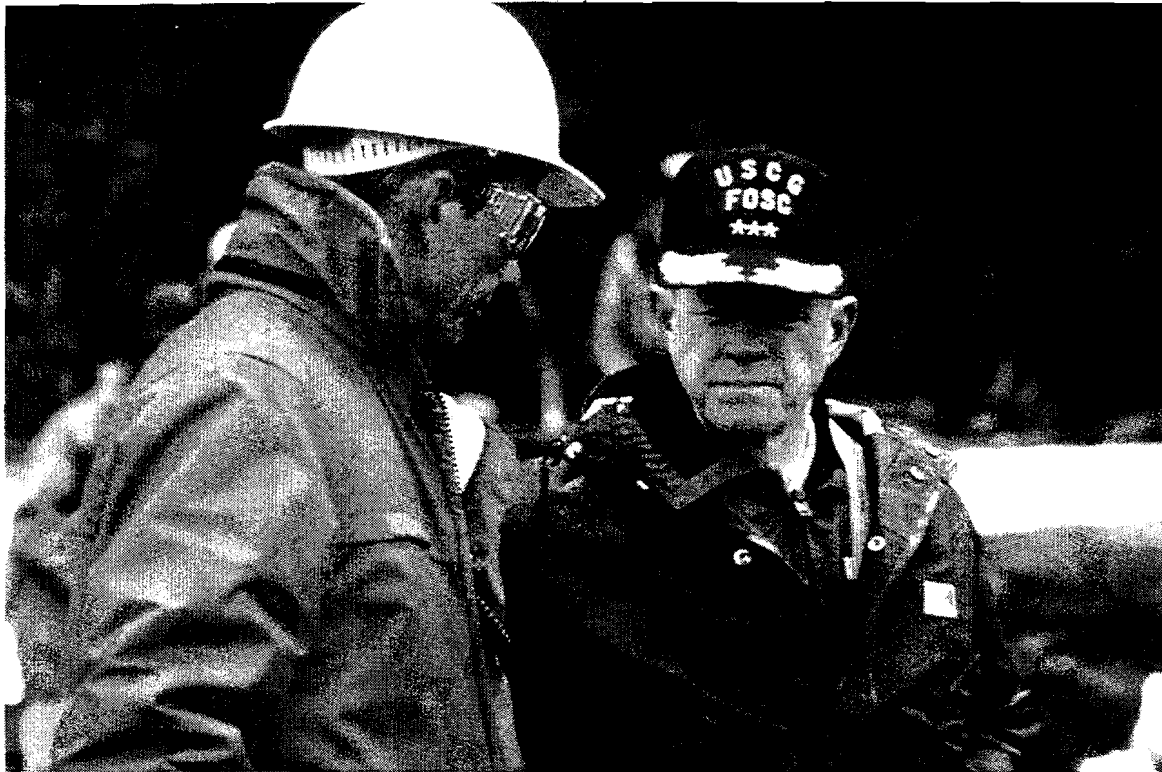
*T/V Exxon Valdez during lightering operations April 2, 1989 with T/V Exxon Baytown (different angle).*



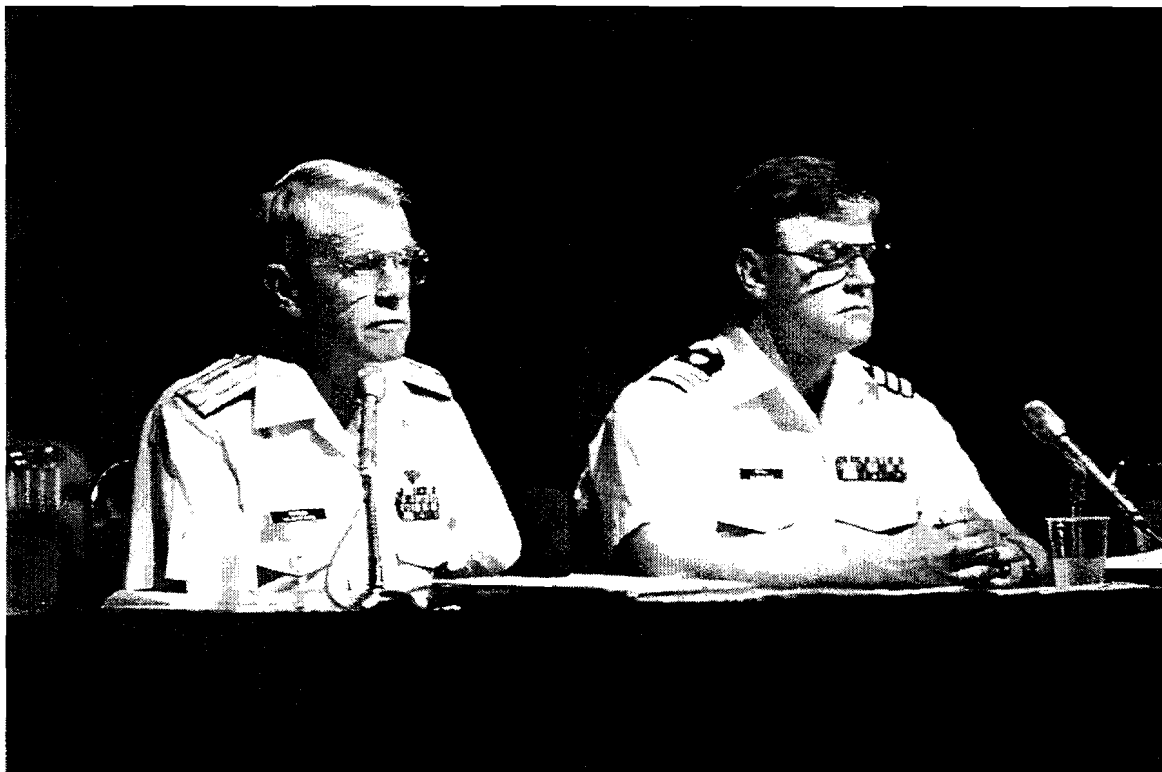
Sawmill Bay hatchery protective boom deployment.



Boom deployment in Prince William Sound.

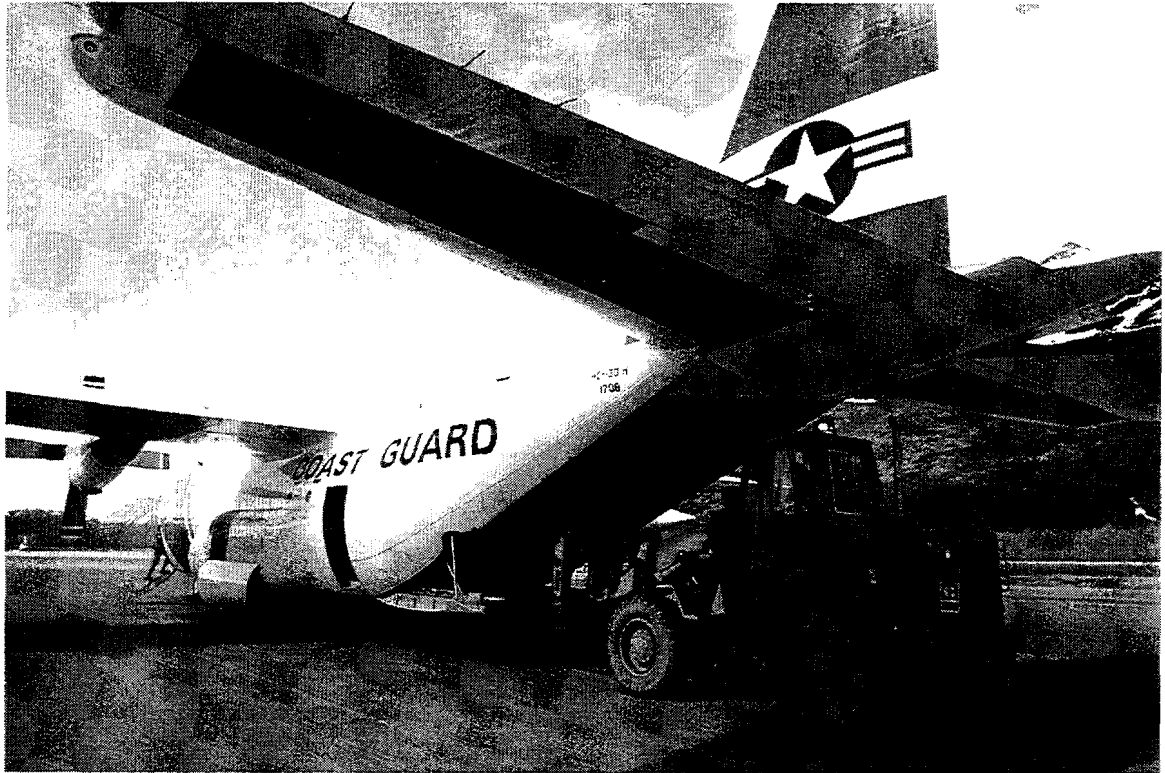


Vice Admiral Robbins, Federal On Scene Coordinator, inspecting beaches.



Vice Admiral Robbins (left) and Commander Steve McCall during National Transportation Safety Board hearings, 1989.





Coast Guard C-130 aircraft unloading spill response gear at Valdez Airport.



USCG Cutter *Sedge* (WLB-402) and local fishing boat skimming oil.



Beach workers on landing craft returning to U. S. Navy Landing Ship Dock-43, USS Ft. McHenry, used for berthing.



Cold water washing involved pumping seawater to fire hoses on the shoreline and flushing oil down to waterline for collection.



Cold water deluge involved pumping seawater to a perforated hose placed parallel to the waterline above the oiled area.



Maxi-barges conducted water wash operations with hand-held hoses on inaccessible areas.





French Egmolap II skimmer on Egmpol barge recovering oil in containment boom during shoreline treatment.



Omni-barges were self-propelled and equipped with an Omni-boom (a converted concrete pumping unit) delivering hot water to the shore through a spray head.



Applying Inipol (a nitrogen and phosphorus based nutrient) to accelerate the natural biodegradation of oil.



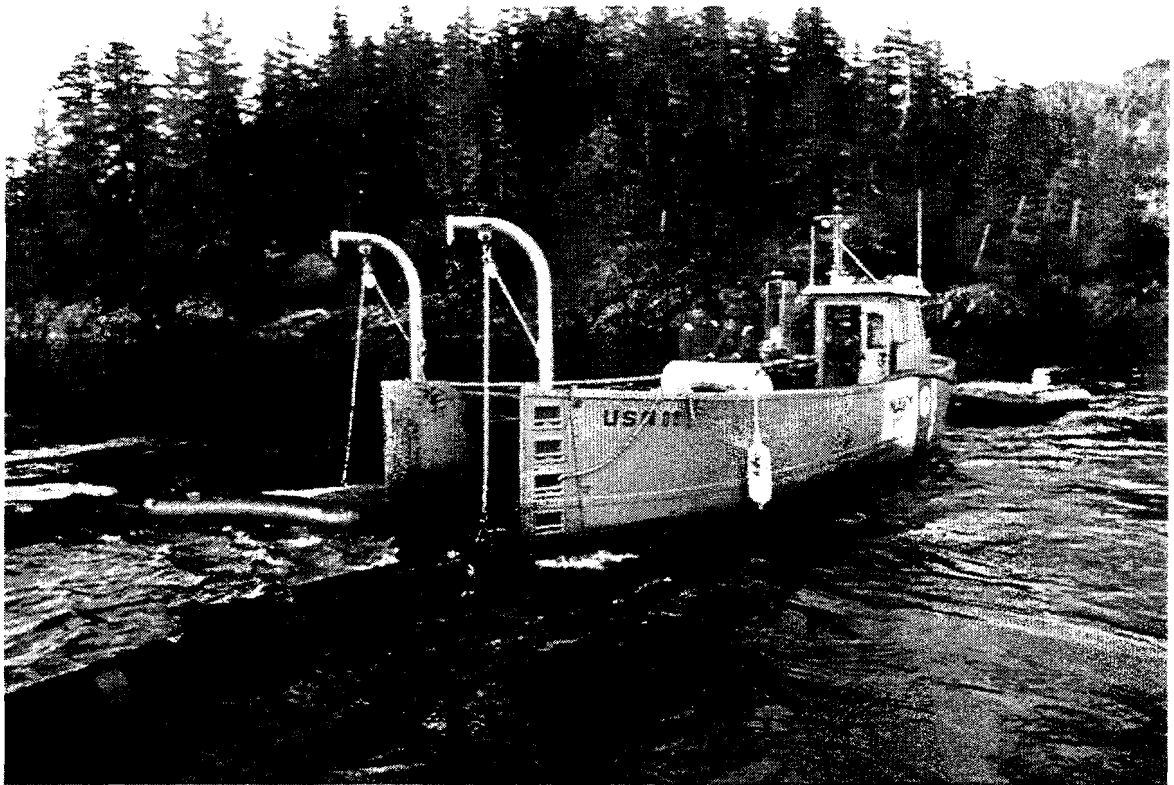
Mechanical treatment used large equipment to relocate or expose oiled beach materials into the tidal zone to allow natural tidal flushing.



Manual removal treatment.



Oily solid waste awaiting processing.



U.S. Navy Marco class V skimmer.



Volunteer workers cleaning sea otter at Sea Otter Rehabilitation Center.

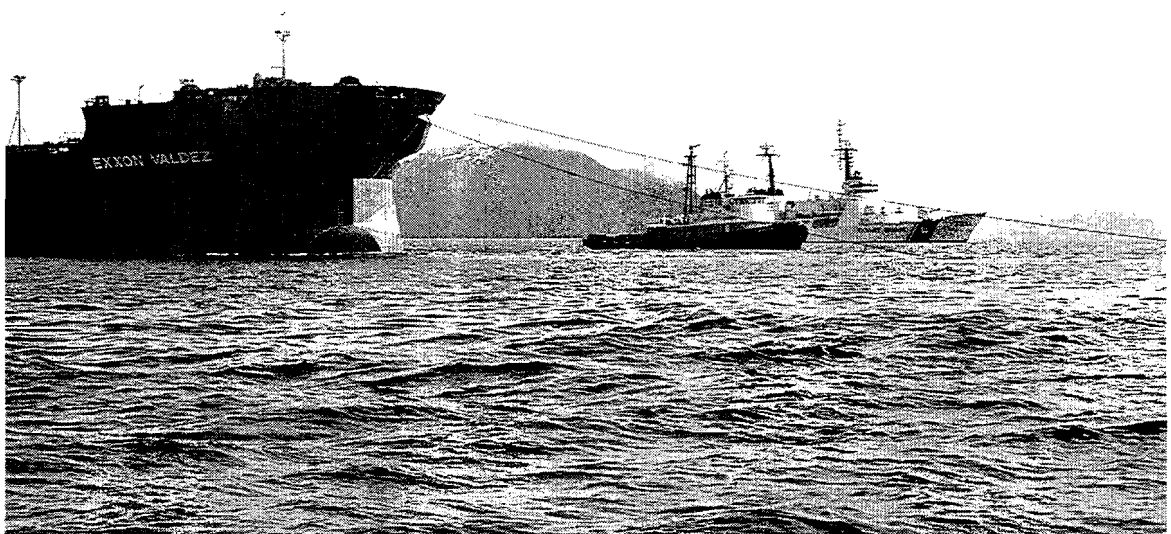


Coast Guard officer holding recently cleaned sea otter at rehabilitation center.

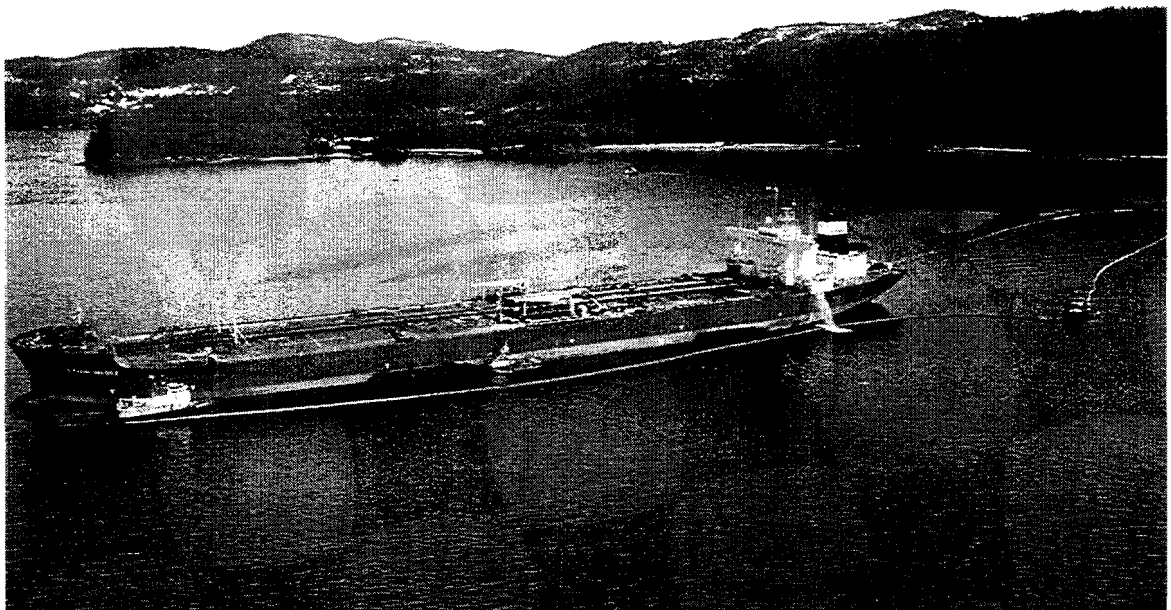


Two recently cleaned puffins at one of the bird rescue centers.





T/V *Exxon Valdez* being towed to Outside Bay, Naked Island on April 5, 1989 escorted by USCG Cutter *Rush* (WHEC-723).



T/V *Exxon Valdez* in Outside Bay fully boomed on April 6, 1989.



T/V Exxon Valdez in drydock in San Diego.



SEL-188 archeological site (photo courtesy of Exxon Cultural Resources Program.)



Rear Admiral Ciancaglini (FOSC) during press tour of Prince William Sound in 1992.



Oily debris removal from Latouche Island (LA-20) during Final Shoreline Assessment (FINSAP) in 1992.





Smith Island, located directly in the path of the spill, was heavily oiled in 1989.



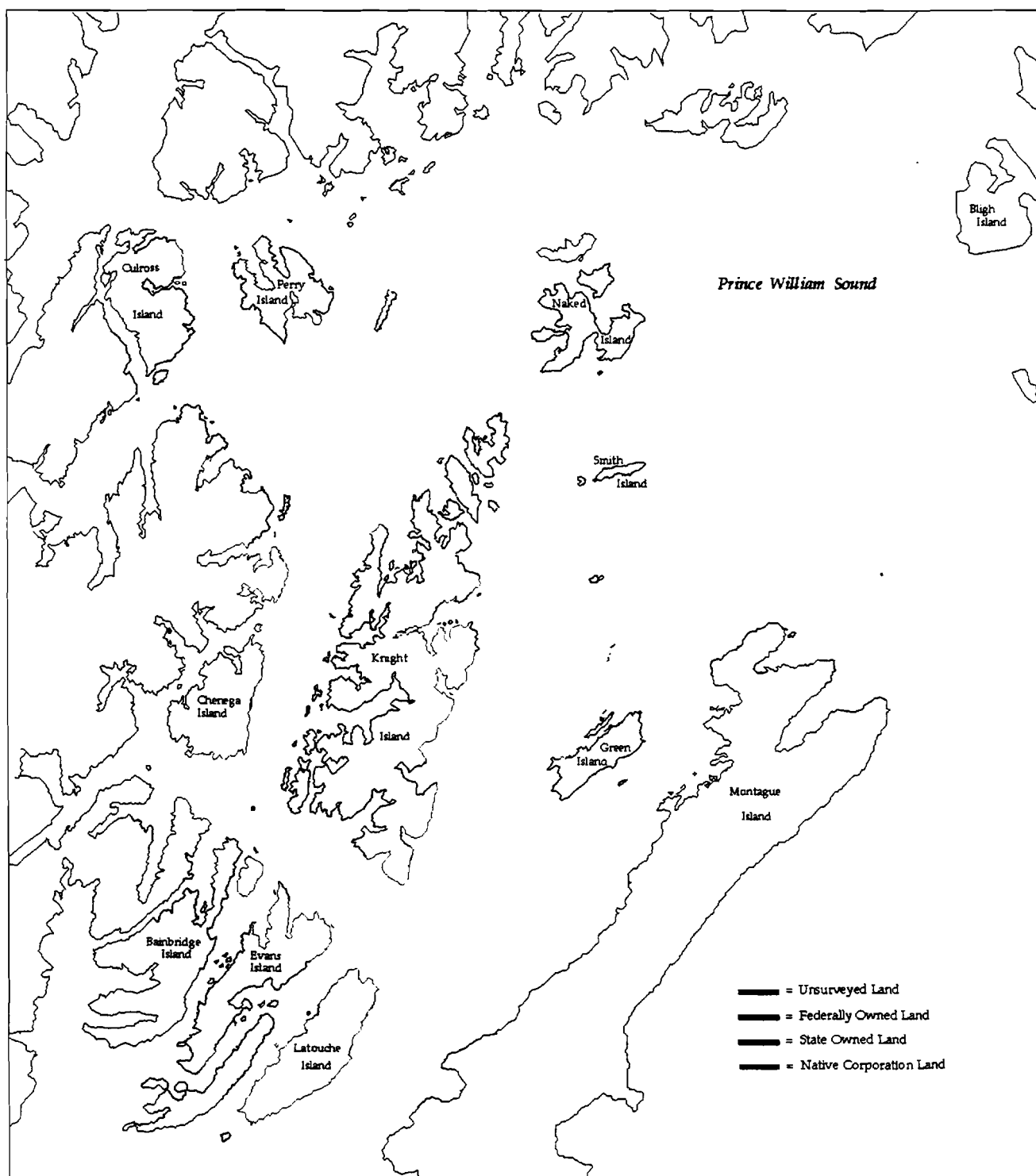
Smith Island, 1992.



Pooled oil collected on this cobblestone shoreline in Green Island, 1989.



Green Island, 1992.



Land ownership of surveyed areas in Prince William Sound, from 1990 survey data.

## CHAPTER 9. CHEMICAL SHORELINE CLEANERS

### OVERVIEW

The nearly two-year controversy over approval of the chemical shoreline cleaner Corexit illustrates well the limits of scientific advice to Federal On Scene Coordinator (FOSC) in the midst of a highly contentious oil spill cleanup. Repeated requests for approval by Exxon, coupled with substantial investments in research and development (R&D), served in retrospect only to generate ever more elaborate testing protocols and approval criteria, soon outstripping the ability of the testing that could be done to produce definitive results. This left those in the arena, in which decisions were being made highly vulnerable to political forces. Lacking strong backing from the Regional Response Team (RRT), whose ability to approve shorelines cleaners was constrained by the willingness of the state to grant approval, the FOSC had little option but to follow the technical guidance provided by his own ad hoc shoreline cleanup advisory committees. But they too found it difficult to escape the consequences of an ever deepening dispute between Exxon and the state of Alaska.

This chapter describes Exxon's efforts to gain approval from the FOSC for use of the shoreline chemical Corexit and the long series of tests, and highly conditioned, limited approvals that resulted (figure 9.1). The chemical was never approved for wide-scale use and Exxon abandoned its efforts, with vocal protest of how it had been treated, in mid-1990.

### AUTHORITIES, RESPONSIBILITIES, AND POLICIES WITH RESPECT TO USE OF CHEMICALS ON SHORELINES

The National Contingency Plan (NCP) is the primary source of policies and procedures for the use of chemical agents in oil spill response actions. Subpart H requires that the Environmental Protection Agency (EPA) prepare, following the criteria of section 311 of the Clean Water Act, a schedule of those chemical and biological agents that are authorized for use on oil spills (the NCP Product Schedule).<sup>1</sup> The decision to apply agents on the schedule in the field, however, requires either preapproval by the RRT in an approved contingency plan, or the concurrence of both EPA (through its RRT representative) and the state with jurisdiction over the affected waters.<sup>2</sup> When pre-approval has not been granted (as was the case for use of chemical shoreline cleaners in the *Exxon Valdez* response), the OSC must not only seek EPA, state, and RRT approval before permitting a responsible party to use chemical cleaners, but must also engage in extensive consultations with other "appropriate" agencies. In the *Exxon Valdez* spill this group also included the National Oceanic Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service (FWS), the National Park Service (NPS), and

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1. 40 CFR 300.81.

2. 40 CFR 300.84.

Native groups, all of whom had stakes as managers of lands where chemical beach cleaners could have been applied.

Policies on the use of chemical and biological agents in oil spill response, in force at the time of the spill, might be characterized as cautious but encouraging. For example, while the Marine Safety Manual cautions against the use of chemical agents other than by the approval process outlined in subpart H, it also notes that “dispersants or chemical agents may be more effective than mechanical or physical methods for mitigating pollution damage.”<sup>3</sup>

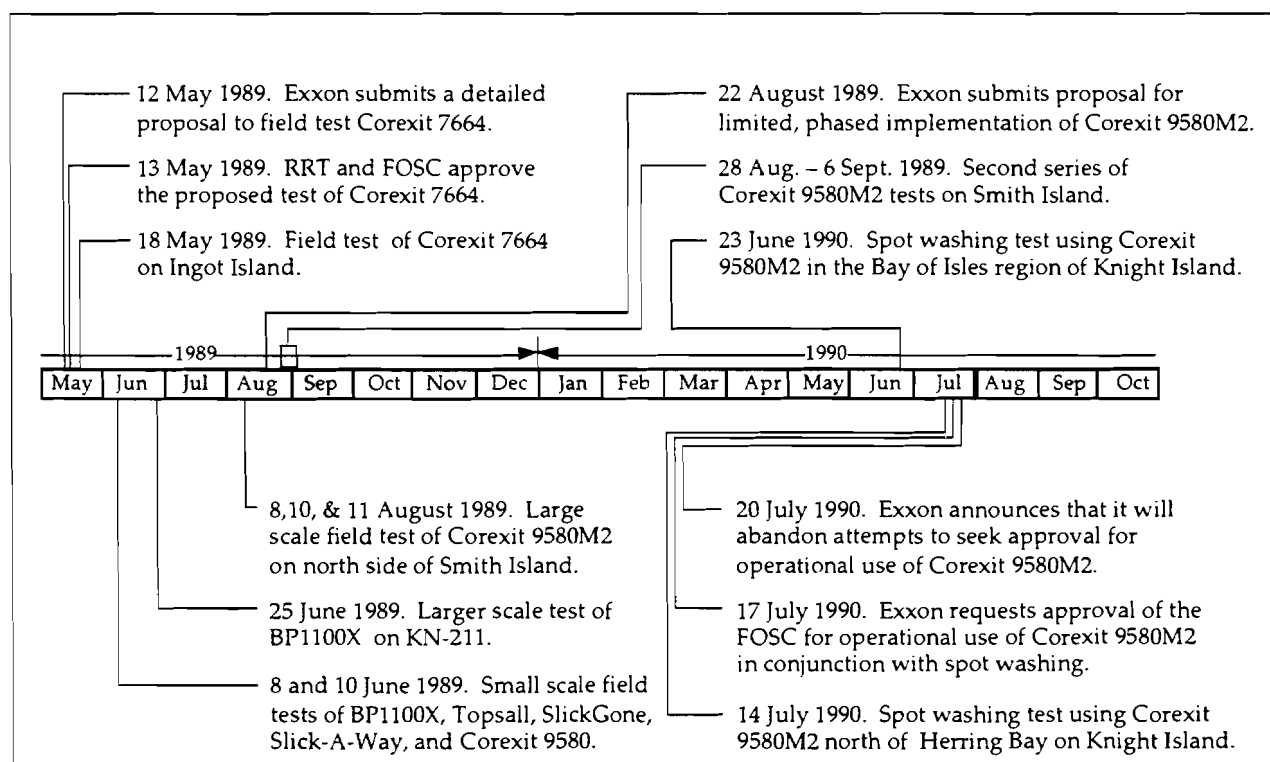


Figure 9.1. Timeline of key events in the controversy over use of chemical beach cleaners.

The NCP further notes that *all* treatment methods must be selected and applied in ways that assure protection of human health and environment: “Of the numerous chemical or physical methods that may be used, the chosen methods should be the most consistent with protecting the public health and welfare and the environment.”<sup>4</sup> The Marine Safety Manual amplifies the point:

[The OSC’s] monitoring tasks include: Ensuring selected cleanup techniques and equipment result in the least environmental damage or interference with designated water uses including the protection of vulnerable or endangered species of waterfowl and wildlife.<sup>5</sup>

Thus the stage was set for what developed into considerable controversy when, in late April of 1989, Exxon made its first request to the FOSC for permission to add chemical

3. USCG, “Marine Safety Manual,” Commandant’s Instruction no. M16000.7, ch. 7, sections 7 (B)(3)(b)(3) and 7 (D)(3).

4. 40 CFR 300.53(b).

5. USCG, “Marine Safety Manual,” ch. 7, sec. 7(B)(3)(b)(4).

dispersants to its arsenal of approved shoreline-cleanup tools.<sup>6</sup> Several different shoreline dispersant chemicals were proposed and within a few months at least six had been tested. None were ever approved for wide-scale application, however, though Exxon's attempts to gain authorization to use Corexit, the shoreline cleaner it favored, extended well into the 1990 cleanup season. A brief description of what shoreline dispersants are serves to frame the events and issues that surrounded their proposed use in the response.

## SHORELINE DISPERSANTS

In their effect on stranded oil, shoreline dispersants behave much like their counterparts used in treating floating oil. They are designed to break down the oil on a shoreline, rendering it into small droplets that will be washed back into the surrounding waters. There it is assumed that, like chemically dispersed floating oil, they will further disperse and be biodegraded. Shoreline dispersants, like bioremediation compounds, have received only limited testing and use in actual spill situations, however. This appears to be due not so much to questions of their efficacy as to concerns for toxicity. The latter can be traced to the cleanup of the *Torrey Canyon* spill in 1967, when some seventy-five thousand barrels of "first generation toxic dispersants" were used to treat the oil-contaminated shorelines of southwestern England. The detergent used proved to be particularly toxic to marine organisms and, although it was effective in removing the oil, its use was ultimately judged to have "caused extensive mortalities of animals and algae, proportional to dispersant dose."<sup>7</sup> Since that time, the use of shoreline dispersants has been treated with much skepticism, which carried over into the *Exxon Valdez* oil spill response.

Today there remains a legacy of concern for the potential toxicity on the nearshore environment of the oil/dispersant mixture that is produced when shoreline dispersants are used.<sup>8</sup> The shoreline dispersant Corexit 7664, an Exxon product, was used in 1970, in response to the *Delian Apollon* Bunker C fuel oil spill in Tampa Bay, Florida, to treat approximately two hundred miles of contaminated shoreline.<sup>9</sup> This was one of the few instances since the *Torrey Canyon* spill when a shoreline dispersant was widely used. Studies done at the time suggested that there had been "no" toxic effects,<sup>10</sup> and subsequent laboratory studies of Corexit 7664 showed that toxic concentrations were considerably higher than typical water column concentrations observed in field applications.<sup>11</sup>

6. Exxon, "Field Test Proposal" (proposal for the use of Corexit 7664, 30 Apr. 1989), no. C294, FOSC Exxon Valdez Archive.

7. National Research Council, *Using Oil Spill Dispersants on the Sea* (Washington, D.C.: National Academy Press, 1989), appendix B, 318.

8. EPA Emergency Response Team, "EPA/ERT Comments on the Use of Corexit 7664 to Remove Stranded Oil from Alaskan Beaches," no. C750, FOSC Exxon Valdez Archive, 4. The memorandum references the 1987 Annual Book of ASTM Standards, vol. 11.04, sec. 11, "Water and Environment Technology."

9. G. P. Fiocco et al., "Development of Corexit 9580—A Chemical Beach Cleaner," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 395.

10. G. P. Canevari, *Proceedings of the 1979 Oil Spill Conference* (American Petroleum Institute, 1979), 443–46. Cited in Fiocco et al., note 9.

11. Dr. A. W. Maki (Exxon), memorandum to Harrison et al., 29 Apr. 1989, no. C294, FOSC Exxon Valdez Archive. The primary concern is not with the compound itself, according to the memo, but with "Corexit dispersed oil."

## EPA'S GUIDANCE TO THE FOSC

Vice Admiral Clyde Robbins, within the first month of the response, requested information from the EPA regarding the use of shoreline dispersants on oil-impacted shorelines. The EPA responded with a background paper compiled by the EPA Emergency Response Team in New Jersey.<sup>12</sup> This report noted that the *Exxon Valdez* spill offered the potential for testing some of these chemicals; but it also expressed concern about the potential toxicity of shoreline dispersants, highlighting in particular a preamble statement on shoreline dispersants prepared by the American Society of Testing and Materials (ASTM):

Dispersant use is primarily a spill control method, not a cleanup method. Such use can give spill response personnel some control over where the impacts of a spill will occur and what types of impacts they may be. In general, the tradeoff that must be evaluated is between the long residence time of the spilled oil that strands on shorelines versus the short-term impact of dispersed oil in the water column....Should there be continued interest in experimenting with dispersants for shoreline cleanup, it should be kept in mind that it is contraindicated in almost every case for environmental protection, except in the most insensitive habitat areas.<sup>13</sup>

Special consideration needs to be given to the impact of the dispersed oil on other environments when using shoreline dispersants, the report continued, including the intertidal zones of treated shorelines and other shorelines adjacent to treatment sites. For environments and contamination such as that associated with the *Exxon Valdez* oil spill, if the decision to use shoreline dispersants is made:

The more desirable products are those which will lessen cohesive forces between the oil and the rock surfaces and that will NOT [emphasis added] form oil droplets which will be dispersed into the water column....The objective in the near shore environment is to remove oil from the water surface without entraining it in the water column, where it could affect the subtidal zone and the adjacent nearby intertidal zones.<sup>14</sup>

The EPA advised Vice Admiral Robbins that it was: "Willing to consider any proposal Exxon may care to submit for a demonstration project....[T]he Exxon Valdez major oil spill may present a learning opportunity...[and] a demonstration may prove that there is a potential use for dispersants in Prince William Sound and Gulf of Alaska clean-up operations."<sup>15</sup> It recommended that chemicals other than those produced by Exxon itself should be reviewed, and that all testing should be done with the goal of generating quantitative data.

The direction that Coast Guard and Alaska Department of Environmental Conservation (ADEC) decision makers subsequently took in their construction of decision criteria for use in evaluating shoreline dispersants, particularly with respect to the emphasis placed on water column toxicity and recoverability of the loosened oil

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12. G. L. Kellogg (EPA Region 10), letter to Vice Adm. C. E. Robbins, 28 Apr. 1989, no. C750, FOSC Exxon Valdez Report. An attached memorandum from the EPA Emergency Response Team references the 1987 Annual Book of ASTM Standards, sec. 11 (Water and Environmental Technology).

13. Ibid., attachment, 2.

14. Ibid., 4.

15. Kellogg, letter to Robbins, 28 Apr. 1989.

and oil/chemical mixture, proved to be consistent with these early recommendations from EPA.

### SHORELINE DISPERSANT TESTING IN 1989

Bolstered by this agency support for the testing of new treatment methods, Exxon soon announced plans to “aggressively pursue alternative techniques,” proposing on 30 April a test of Corexit 7664, the dispersant used in the *Delian Apollo* spill. The purpose of the test was to determine the cleaner’s effectiveness in enhancing the level of cleanup achieved and in speeding up the rate of cleanup over that of the cold water flush/float and warm-water wash techniques that had been approved for use on 17 April.<sup>16</sup> Corexit 7664 is an Exxon trade name for a chemical agent that contains ester surfactants in mixed oxygenated solvents, isopropyl alcohol, and water.<sup>17</sup>

Exxon’s proposal to test Corexit 7664 brought immediate expressions of concern from the Cordova-based Prince William Sound Conservation Alliance.<sup>18</sup> In response to these and other concerns, Vice Admiral Robbins established, following discussions with the RRT, a number of requirements which were to guide Exxon’s search for acceptable shoreline dispersants:

- a. Exxon will have to investigate other products than those they manufacture.
- b. The resource agencies of the RRT...will review the literature on the proposed chemical additives and proposal...[and] provide a response which will address effectiveness, toxicity, test protocol suggestions and reporting criteria.
- c. [O]nly...those additives specifically listed on the National Contingency Plan Products List [will be authorized] unless a waiver is specifically granted by the EPA.
- d. The Interagency Shoreline Committee...will be given an opportunity to review the proposal and provide comments.
- e. Field tests will be fully documented with data provided to the resource agencies for review and comment to me.<sup>19</sup>

These guidelines are quite similar to the ones the Prince William Sound Conservation Alliance had proposed.<sup>20</sup>

In addition to these criteria, the RRT asked that Exxon provide to EPA and ADEC a sampling and analysis plan, data-sharing plans, recent toxicity data on products proposed for testing, the location and size of the test area, and the operational details.<sup>21</sup>

16. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 30 Apr. 1989, no. C292, FOSC Exxon Valdez Archive.

17. Dr. A. W. Maki (Exxon), letter to Shoreline Cleanup Committee, 6 May 1989, no. C2029, FOSC Exxon Valdez; and National Research Council, *Using Oil Spill Dispersants on the Sea*, table A-3.

18. N. R. Lethcoe and J. McCune (Prince William Sound Conservation Alliance), letter to Vice Adm. C. E. Robbins, 30 Apr. 1989, no. C22, FOSC Exxon Valdez Archive.

19. Vice Adm. C. E. Robbins, letter to J. McCune (Prince William Sound Conservation Alliance), 5 May 1989, no. C53, FOSC Exxon Valdez Archive.

20. Lethcoe and McCune letter to Robbins, 30 Apr. 1989.

21. Capt. G. E. Haines (RRT), memorandum to Vice Adm. C. E. Robbins, 10 May 1989, no. C78, FOSC Exxon Valdez Archive. The RRT expressed high regard for “the innovative thinking on the part of Exxon to improve shoreline cleanup” in this memorandum.



It was also understood that the testing and sampling protocols would be developed jointly by EPA and ADEC.<sup>22</sup>

On 12 May 1989, Exxon submitted a detailed proposal to field test Corexit 7664, in response to the requirements imposed by the FOSC and RRT. Sampling plans, toxicity information, and a proposed test-location on Ingot Island (in Prince William Sound), together with specific operational plans, were included.<sup>23</sup>

On 13 May, the RRT approved the proposed test as did the FOSC, contingent upon Exxon making a commitment to sample water and soil for total hydrocarbons, volatiles, and polyaromatic hydrocarbons (PAHs), as well as for the presence of Corexit. Much importance was placed on toxicity testing, specifically with respect to effects on pink salmon fry, mytilus (mussels), and subtidal benthic fauna. In addition, the FOSC desired that oil recovery equipment (i.e. booms, skimmers, etc.) be on hand and in position in order to contain and recover any surface oil generated as a result of the test.<sup>24</sup> The test was to consist basically of the presoaking of a beach section with a hot water/Corexit solution, followed within one to two hours by a wash with a weaker dispersant solution and a final "flush/float" wash.<sup>25</sup>

The Ingot Island Corexit 7664 test occurred on 18 May 1989 (figures 9.2 and 9.3). Its results were characterized by both EPA and Exxon as "marginal": "Results for the Corexit test have been characterized as 'marginal' by Exxon," reported John Malek of EPA. "My own assessment concurs with that." Malek noted that the cleaning effect was mixed, enhancing the cleaning of subsurface gravel in some places while showing no effect in others. But he concluded that "based on subjective evaluation, the results are sufficiently encouraging that additional testing of various treatment techniques and methods (including chemicals) should be pursued."<sup>26</sup>

One outcome of operational significance from this first shoreline dispersant test, however, was affirmation that application procedures recommended in the ASTM guidelines conveyed to Vice Admiral Robbins via EPA's Emergency Response Team should be followed in any use of shoreline dispersants on stranded *Exxon Valdez* oil. The ASTM recommendation was that: "The dispersant should be applied to the stranded oil on a rising tide ahead of the waves to minimize penetration of the oil in the subsurface sediments. The rising tide will provide the necessary mixing energy and the required flushing action."<sup>27</sup> This flushing action would ideally carry the loosened oil away from the shoreline where recovery by skimmers could occur.

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22. USCG District 17, message (R 211733Z MAY 89) to commandant, 21 May 1989, no. C279, FOSC Exxon Valdez Archive.

23. Exxon, "Proposal-Test Application of Corexit 7664-Field Test Protocol," 12 May 1989, no. C1982, FOSC Exxon Valdez Archive. Submitted to the RRT and FOSC.

24. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 13 May 1989, no. C104, FOSC Exxon Valdez Archive.

25. USCG, news release, Federal Media Center, Valdez, 13 May 1989, no. C106, FOSC Exxon Valdez Archive.

26. J. Malek (EPA), memorandum to J. Dreschler, 22 May 1989, no. C2018, FOSC Exxon Valdez Archive. This memorandum contains a detailed account of the 18 May Corexit 7664 test which occurred on Ingot Island.

27. EPA Emergency Response Team, "EPA/ERT Comments on the Use of Corexit 7664 to Remove Stranded Oil from Alaskan Beaches," 3.

But the mixed results of the May Corexit 7664 test soon led Exxon to terminate further consideration of this agent as a viable treatment method. In the words of one Exxon researcher: "[Corexit 7664] just didn't move any oil. So we considered six other dispersants that look most promising."<sup>28</sup>

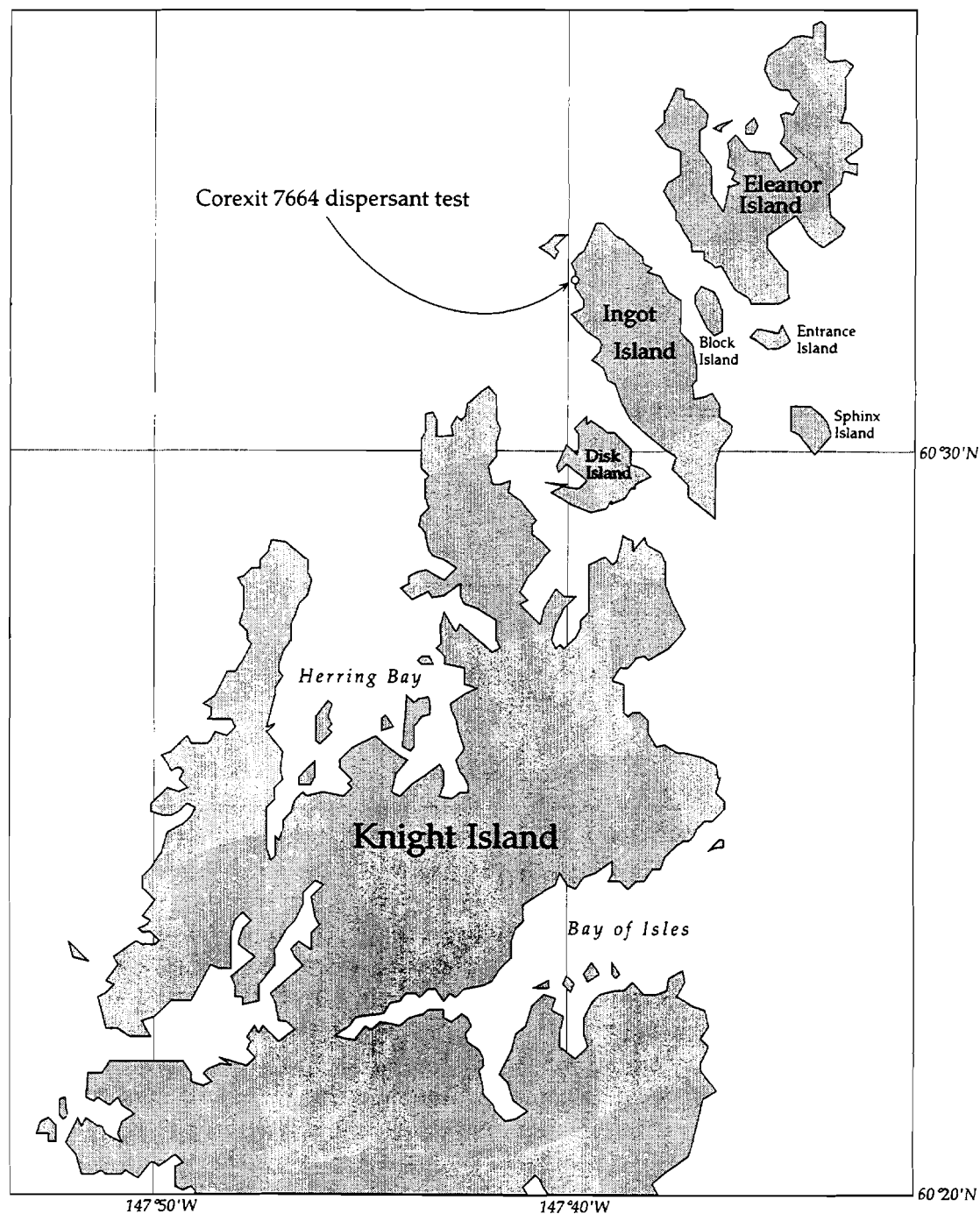


Figure 9.2. Approximate location of Corexit 7664 dispersant test site.

28. Cutter Information Corporation, "Exxon Tests Six More Dispersants in Prince William Sound," *Oil Spill Intelligence Report* 12 (15 June 1989).

## THE R & D COMMITTEE AND SHORELINE DISPERSANTS

As Exxon was shifting toward the examination of a wider array of chemicals for possible use on stranded oil, an important institutional change was occurring that would affect the handling of a whole range of untested but promising shoreline-cleanup techniques. Cleanup proposals and suggestions were by now arriving at the FOSC offices in Valdez on a near daily basis. Vice Admiral Robbins requested that NOAA coordinate an effort to evaluate innovative shoreline cleanup techniques.<sup>29</sup> The first issue that came to the new R&D Committee's attention was a request for assistance in evaluating Exxon's proposal for further shoreline dispersant testing.<sup>30</sup>

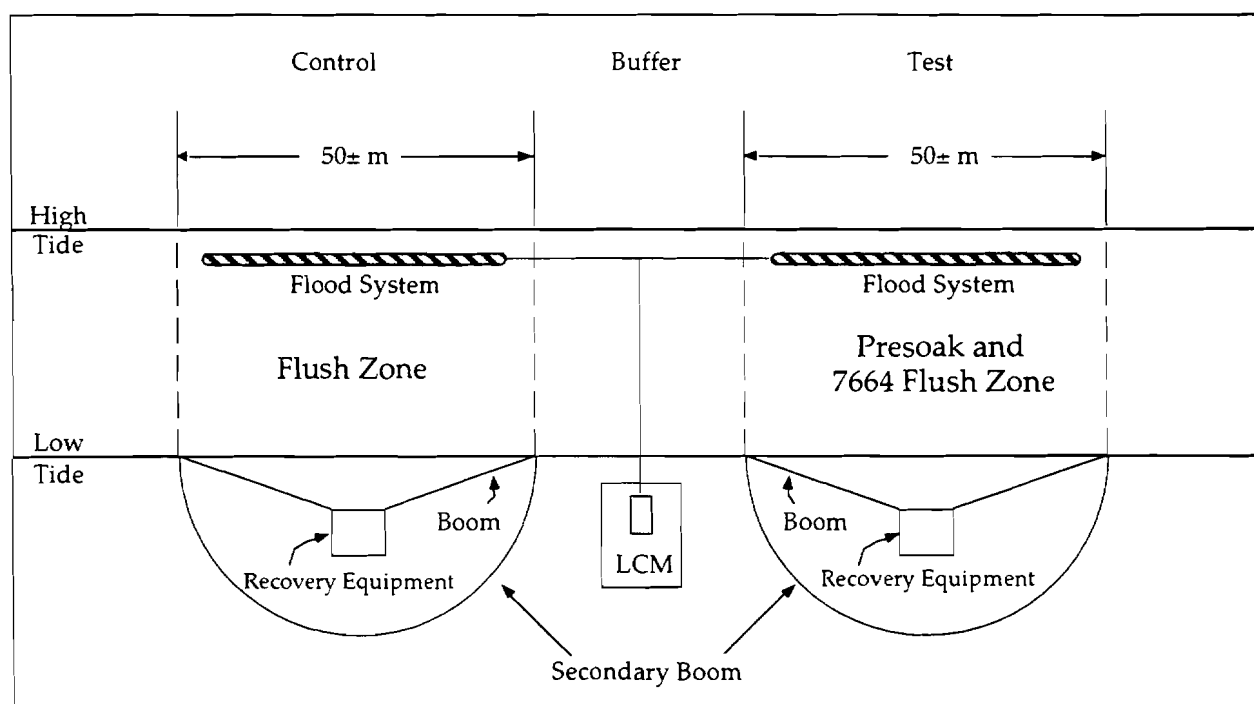


Figure 9.3. Schematic representation of Corexit 7664 dispersant trial configuration.

Source: Reproduced with permission from Exxon Co., USA.

The committee strongly supported the search for effective shoreline dispersants, noting that the continuing weathering of the oil would make it more difficult to maintain the cleaning effectiveness of the cold-water deluge washing and high-pressure warm-water flushing methods then in use.<sup>31</sup> In addition, water-washing was not removing subsurface oil, which, in many locations, was slowly percolating to the surface to re-oil repeatedly shorelines that had already been treated. The R&D Committee recommended that initial shoreline dispersant tests be conducted on small (10 ft. X 10 ft.) plots, with the more promising products selected for larger-scale testing. The small size of the test plots would allow a larger number of chemicals to be tested while minimizing potential negative impacts.<sup>32</sup>

29. For details on the formation of the Interagency Shoreline R&D Committee see chapter 6, "Shoreline Cleanup in 1989."

30. Capt. D. Zawadzki, memorandum to RRT/Region 10, 1 June 1989, no. C384, FOSC Exxon Valdez Archive.

31. J. Michel (NOAA), memorandum to Vice Adm. C. E. Robbins, 31 May 1989, no. C816, FOSC Exxon Valdez Archive.

32. Ibid.

With the R&D Committee taking an activist role in shaping Exxon's test plans and shepherding them through the approval process, the necessary approval from the RRT for additional testing in early June came immediately. The products to be tested in the "mini-test" devised by the R&D Committee were BP1100X, a dispersant produced by British Petroleum, Topsall, SlickGone, Slik-A-Way, and Corexit 9580.<sup>33</sup> The RRT initially objected to the inclusion in the test of Corexit 9580, the product ultimately promoted most strongly by Exxon, as it was not yet listed on the NCP Product Schedule.<sup>34</sup>

The tests were conducted on 8 and 10 June. Following evaluation of the mini-test results, BP1100X appeared to be the most effective "pre-soak" agent. It was thus recommended by the R&D Committee for a large-scale test in which toxicity data would be collected. A drawback to selecting this product for further testing, however, was that there was no established analytical method for measuring its concentration in water and sediment samples.<sup>35</sup> The committee thus recommended that the RRT approve such a test contingent upon the archiving of water and sediment samples, to be analyzed after an analytical protocol had been developed, a task expected to take several weeks. It also recommended that no approval for use be given until the chemical could be tracked in the environment.

This "carriage before the horse" approach was recommended by the R&D Committee because of growing concern with the shortness of the available cleanup window. As R&D Committee co-chair Sharon Christopherson wrote in her recommendation to the FOSC, "Due to the short time remaining this year before adverse weather sets in, the Committee feels it is imperative that any new technology which might help the cleanup operations be tested as soon as possible."<sup>36</sup> The test took place on Knight Island, segment KN-211, on 25 June 1989 (figure 9.4). The chemical was applied to a 100-foot-long shoreline section.

The test of the BP product proved to be much less than satisfactory, as it was hampered by operational difficulties. Because the wash-water system broke down, the chemical stayed in place too long, losing its effectiveness. Much less hydrocarbon was mobilized than expected, according to a report on the test by Exxon Manager Otto Harrison. Moreover, agency representatives at the test had expressed concern that the mobilized oil was highly dispersed and would therefore be difficult to collect. "Taking all of the above into consideration, we decided to abort the planned control test and abandon any further analytical work on the BP1100," reported Harrison.<sup>37</sup>

Exxon chose to return to its own product, Corexit 9580, which, following its disappointing performance in the June mini-tests, had been reformulated to improve

33. Capt. G. E. Haines (USCG/RRT), letter to FOSC, 2 June 1989, no. C397, FOSC Exxon Valdez Archive.

34. *Ibid.* A request for the inclusion of Corexit 9580 on the NCP Product Schedule was then being made to EPA.

35. S. Christopherson (NOAA), memorandum to FOSC, 21 June 1989, no. C605, FOSC Exxon Valdez Archive.

36. *Ibid.*

37. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 13 July 1989, no. C1038, FOSC Exxon Valdez Archive.

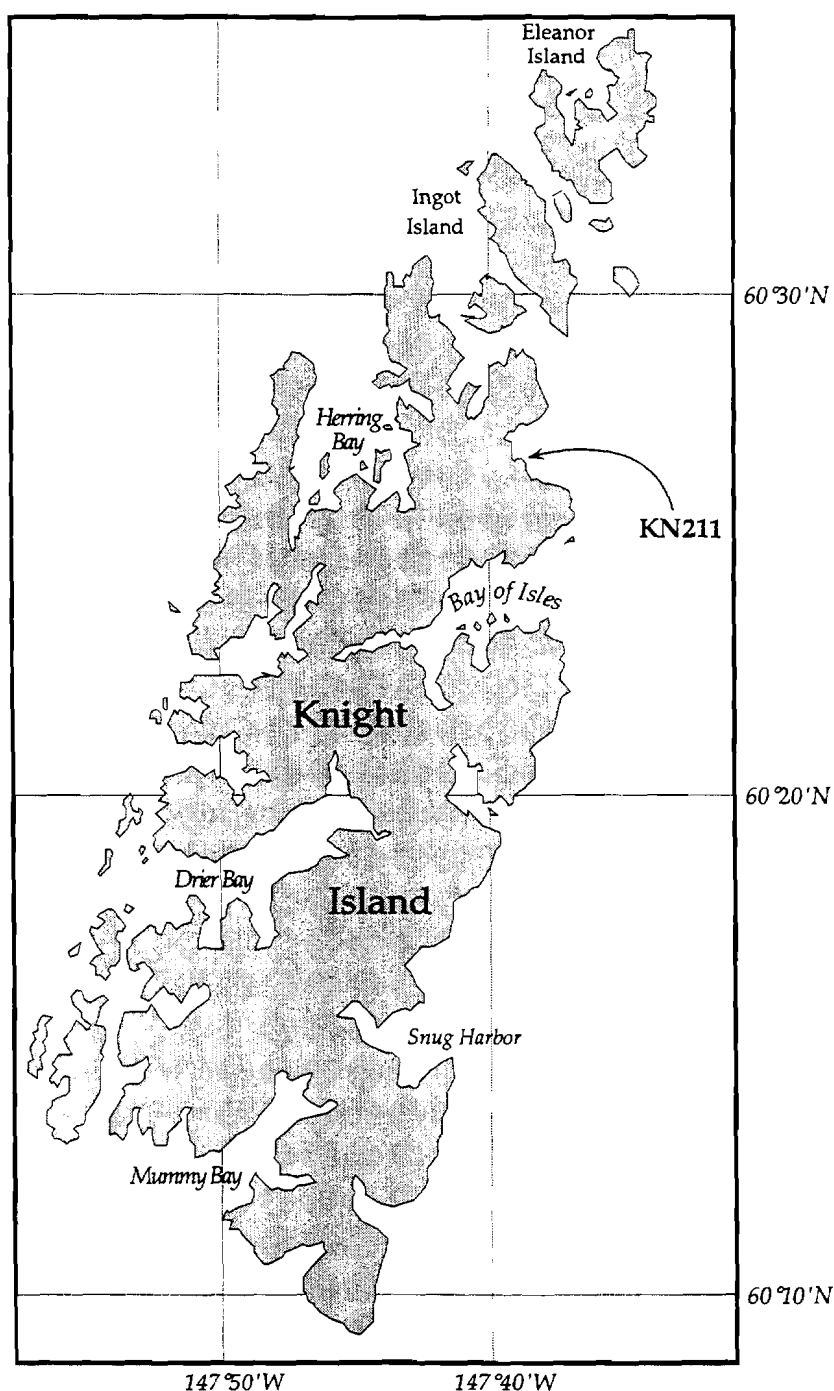


Figure 9.4. Approximate location of segment KN-211 on Knight Island.

its cleaning effectiveness and to reduce the oil dispersion it caused.<sup>38</sup> The modified Corexit 9580, Corexit 9580M2, had been subject to small-scale field testing on Eleanor

38. Ibid. A fact sheet supplied to the RRT at a later date characterized the dispersion of Corexit 9580M2 as "7%," compared to "19 to 55%" for BP1100X (USCG, "RRT Meeting Agenda," 20-21 July 1989, no. C1056, FOSC Exxon Valdez Archive).

Island on 10 July. Harrison now proposed that larger-scale testing of this product be done, using expedited procedures: "In view of the low toxicity of Corexit 9580, we believe that total petroleum hydrocarbon (TPH) data should be sufficient for an adequate assessment of environmental impacts. Therefore, assuming favorable results of the proposed field test, we plan to request interim approval for operational use of Corexit 9580 as soon as the TPH data can be obtained." The rationale for this proposed abridgement of the testing plans was concern that otherwise there would be no chance to employ Corexit before the expected September demobilization.<sup>39</sup>

Exxon's sense of urgency was shared by the R&D Committee. Co-chair Sharon Christopherson told the *Oil Spill Intelligence Report*: "The time frame is critical. We either make a decision on a dispersant soon, or we forget about using anything this summer. At this point, if a chemical is approved, we'd have at most 30 days to use it."<sup>40</sup>

The cumbersome nature of the approval process, not only in conducting and analyzing field tests, but in overcoming regulatory impediments, appeared to limit severely the available options, however. The *Oil Spill Intelligence Report* reported in the same story that an earlier modified version of Corexit had been judged by EPA to be "a completely different product that would have required much more preliminary testing."<sup>41</sup>

The R&D Committee was in general agreement with the Exxon proposal for a Corexit 9580M2 test. The virtues of reduced sampling, in terms of expedited decision making, were especially appreciated. At the same time this placed an extra burden on the sampling that would be done to produce an adequate characterization of the oil/chemical mixture that would be dispersed in the test. Most of the R&D Committee's comments, in an internal memorandum to the committee by its co-chair, were aimed at fine-tuning the sampling and analysis plan to maximize information recovery.<sup>42</sup>

EPA, however, speaking through Shannon Cunniff, its representative on the R&D Committee, expressed reservations that the RRT would be able to give interim approval on the basis of the incomplete data that the proposed tests would produce.<sup>43</sup> Laboratory toxicity testing was proposed in lieu of many of the field studies that had been done in earlier tests. EPA suggested that it might be put in the position of having to refuse to grant either interim or permanent approval. Ms. Cunniff also doubted whether Exxon had yet supplied sufficient data for Corexit 9580M2 to be listed on the

39. Harrison, letter to Robbins, 13 July 1989.

40. Cutter Information Corporation, *Oil Spill Intelligence Report* 12 (20 July 1989): 2-3.

41. Ibid.

42. S. Christopherson (NOAA), memorandum to R&D Committee, 15 July 1989, no. C1665, FOSC Exxon Valdez Archive. Exxon had proposed that in-situ toxicity testing with juvenile salmonids not be included due to the difficulty of obtaining the fish. The R&D Committee concurred that mysid shrimp, adult pink salmon, and sea urchins bioassay tests could be substituted for field tests involving caged fish.

43. S. Cunniff (EPA), memorandum to chairperson of the R&D Committee, 16 July 1989, no. C1658, FOSC Exxon Valdez Archive. This memorandum appears to be a response to the above cited Christopherson recommendation to the R&D Committee.

NCP National Product Schedule by EPA headquarters, a necessary precondition of any approval for field use.<sup>44</sup>

ADEC and Alaska Department of Fish and Game (ADF&G) also voiced concerns regarding the scope of the proposed Corexit 9580M2 test. ADEC took the position that the potential toxicity associated with Corexit 9580M2 was the most important issue, and would be the basis of its decision to approve any tests. It doubted that laboratory testing alone could resolve the questions it had about both acute and chronic toxicity in field use. The rationale presented in an "Approval Criteria" document released by ADEC on 20 July, was that:

Testing of the Corexit 9580M2/PBC [Prudhoe Bay Crude] mixture under controlled laboratory conditions may not reflect true concentrations experienced in field application....Before wide use of Corexit 9580M2 can be allowed there remains the need to correlate the toxicity of indicator test results to real time chemical concentrations and shoreline conditions. For these reasons, field verification of lab toxicity levels is included here as a requirement.<sup>45</sup>

ADF&G added its opinion that testing for in situ toxicity to salmon fry was "essential" for approval.<sup>46</sup>

ADEC also expressed concerns with the elimination of the TPH sampling Exxon favored in waters less than one meter deep, where Exxon had argued that variability in the plume coming off shorelines treated with Corexit was too great for statistically meaningful data to be generated.<sup>47</sup> EPA expressed similar concerns, but felt that the earlier BP1100X tests had confirmed that TPH levels would quickly drop below toxic thresholds in nearshore waters.<sup>48</sup>

The desires for thorough toxicity testing expressed by both EPA and several state agencies served to polarize the relationship with Exxon, which felt driven by the need to move quickly.

Exxon's frustration with the approval process for the first large-scale test of Corexit 9580M2, and with the actions of ADEC in particular, is evident in correspondence with Vice Admiral Robbins.<sup>49</sup> In mid-July, when Exxon responded to agency concerns with a modified version of its proposal, it chose to submit the modifications directly to the FOSC, bypassing the RRT:

We are forwarding this request directly to you because of continuing concerns on [sic] the inefficiencies of the entire review process. Our proposal was reviewed with the R&D Committee at two separate sessions lasting a total of three hours on Saturday and Sunday. There were some constructive well-intentioned comments, but most of the time was consumed

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44. Ibid.

45. A. Viteri (ADEC), "Approval Criteria For Use of Corexit 9580M2," 19 July 1989, no. C1047, FOSC Exxon Valdez Archive.

46. C. Craig (ADF&G), letter to S. Christopherson (NOAA), 16 July 1989, no. C1670, FOSC Exxon Valdez Archive.

47. A. Viteri (ADEC), memorandum to Valdez oil spill response (NOAA) R&D Committee, 16 July 1989, no. C1657, FOSC Exxon Valdez Archive.

48. Cuniff, memorandum to chairperson of the R&D Committee, 16 July 1989.

49. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 17 July 1989, no. C1410, FOSC Exxon Valdez Archive.

by disconcerting changes in policy and requests for sampling and data that has little or no value in reaching a decision for field use.

ADEC also made some apparent policy statements that we find very disturbing at this late date. They stated that commercial use of Modified 9580 is out of the question for August 1 and September 1 would be extremely difficult. Their reasoning is that a thorough review of all the field and lab test results will take time to ensure that indigenous organisms are not threatened by the cleaner, mobilized hydrocarbons or a combination of both. They suggest that we might be successful in applying the chemical next spring. Clearly, we have no interest in pursuing a costly development program that does not help shoreline treatment productivity this summer.

Allowing one week for collecting the TPH data [so that EPA could list Corexit 9580M2 on the NCP list] we expect to submit our formal request for interim approval...in the first week of August.<sup>50</sup>

To complicate the matter further, Exxon was apparently unaware at the time that still more stringent approval criteria for Corexit 9580M2 were being developed by ADEC.<sup>51</sup> These were revealed three days after the release of Exxon's second testing proposal. They called for substantially increased laboratory toxicity testing; moreover, the approval criteria were more stringent than any that had been discussed earlier.

Exxon's Otto Harrison characterized these criteria as "excessive":

[They] go beyond previous requirements, and represent either an attempt to prevent chemicals from being used this summer or a greater interest in conducting research than cleaning the shorelines.<sup>52</sup>

On 25 July, the RRT lent what approval it could to moving the Corexit test forward. It cited its statutory authority in approving both Level I (efficacy testing) and Level II (larger-scale) testing for chemicals on the NCP Products List. But even this level of approval was contingent upon concurrence from EPA and ADEC. Level III approval (wide-area application for oiled-shoreline cleanup) was reserved. Approval was also made contingent upon the development of bioassay data and sampling requirements sufficient to satisfy "operational, resource, and land manager's requirements."<sup>53</sup>

The log jam over Corexit testing appeared to break when on the same day ADEC amended its approval criteria once again by offering to do much of the laboratory toxicity testing it had requested itself. It also offered to predesignate, in cooperation with ADF&G, sensitive areas where Corexit could not be used. Otherwise, approval for interim broad-scale use of Corexit 9580M2 was granted jointly by ADEC and EPA, provided that the FOSC would agree to halt its use if ADEC field verification data showed "significant or potential harm."<sup>54</sup>

50. Ibid.

51. ADEC, "Approval Criteria For Use of Corexit 9580M2."

52. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 21 July 1989, no. C1066, FOSC Exxon Valdez Archive.

53. RRT, memorandum to FOSC, 25 July 1989, no. C1126, FOSC Exxon Valdez Archive.

54. S. Provant (ADEC), letter to Vice Adm. C. E. Robbins, 25 July 1989, no. C1134, FOSC Exxon Valdez Archive.



Exxon, however, remained dissatisfied. Otto Harrison responded to ADEC's initiative by reasserting the company's position that the decision for interim use should be based on TPH results rather than on direct toxicity testing:

Initial NOAA and Exxon TPH results...are very favorable. They indicate that exposures would be very brief and at levels which provide no concern for toxic impacts....We will be in a position to make a decision based on TPH data on July 31; waiting for additional toxicity data will delay application by at least another week.<sup>55</sup>

By this time the Corexit 9580M2 debate was becoming highly visible in arenas well outside the arena of direct conflict. Numerous environmental groups expressed serious reservations about the dispersant and called for an end to its consideration. Concerns were expressed for what was regarded as inadequate toxicity testing and for the recoverability of oil once it was dispersed from shorelines. Previous scientific studies of shoreline dispersants, in which they had been reviewed with considerable skepticism, were repeatedly cited in the many letters that were arriving at the offices of the FOSC.<sup>56</sup>

Nevertheless, by early August, Exxon was pursuing a large-scale test of Corexit 9580M2, while other bioassay data were being generated as required by ADEC, ADF&G, and the EPA. Among Exxon's test objectives was the collecting of information, in an operational setting, on the effectiveness of Corexit 9580M2 in comparison to the warm-water washing technique then in use.<sup>57</sup> On 4 August, the R&D Committee recommended that large-scale testing go forward.<sup>58</sup> It proposed a number of guidelines for the test, including that no more than one application be done on a particular shoreline until the bioassay data could be reviewed.

The large-scale field test of Corexit 9580M2 took place on the north side of Smith Island on 8, 10, and 11 August 1989 (figure 9.5).<sup>59</sup> The test included three individual tests and three control (or reference) tests in which sites were cleaned with standard warm-water washing, the predominant cleanup method in use by this time. Between 250 and 300 gallons of Corexit were applied to about 29,000 square feet of shoreline, and about 235 gallons of oil/Corexit mixture were recovered.<sup>60</sup>

This test was the largest and most exhaustive shoreline dispersant test to date. The Smith Island site, though previously treated, was still regarded as being medium to heavily oiled. It was also a relatively high-energy, well-flushed site with relatively low biological sensitivity in its intertidal zone. Following protocols developed jointly by ADEC, EPA, NOAA, and Exxon, the test was extensively monitored.<sup>61</sup>

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55. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 27 July 1989, no. C1410, FOSC Exxon Valdez Archive.

56. E. Jorgenson and S. A. G. Elgie (Sierra Club Legal Defense Fund), letter to Vice Adm. C. E. Robbins, W. Reilly (EPA), and D. Kelso (ADEC), 2 Aug. 1989, no. C1348; K. McCarty (Prince William Sound Conservation Alliance), letter to Vice Adm. C. E. Robbins, 3 Aug. 1989, no. C1349; and R. Ott (Cordova District Fishermen United), letter to J. Michel (NOAA), 1 Aug. 1989, no. C1344, FOSC Exxon Valdez Archive. Several of these letters cited a National Research Council study led by Dr. J. Butler of Harvard University which had cautioned very strongly against the use of dispersants in the intertidal zone.

57. Ibid.

58. S. Christopherson (NOAA), memorandum to FOSC, 5 Aug. 1989, no. C1503, FOSC Exxon Valdez Archive.

59. Exxon Research and Engineering Company, "Large-Scale Field Test of Corexit 9580, Smith Island, August 8-14, 1989," (report no. EE.2DM.90, 22 Jan. 1990), vol. 2, no. W757, FOSC Exxon Valdez Archive.

60. "Agencies Decide Against Further Use of Corexit," *Oil Spill Chronicle* 1 (15 Aug. 1989): 2.

61. Ibid.

The monitoring program focused not only on the issues of toxicity, which had been so prominent in the debate over Corexit to date, but also on the question of whether Corexit use led to efficiency gains in oil removal compared to standard water-washing techniques. The question was important because shoreline treatment time is increased when Corexit is used. Not only are a larger number of workers required for application, but the need for booming for containment of the oil/Corexit mixture that washes from the shore is substantially increased as well.<sup>62</sup> As noted earlier, Exxon itself had originally proposed that operational effectiveness be an acceptance criterion for Corexit.

The assessment of the difference in oil recovery between the Corexit 9580M2-treated beach and the control site was determined by measuring the oil actually recovered by the skimmers. The effectiveness of containment of the oil/Corexit mixture washed from the Corexit-treated and control sites was estimated from helicopter overflights. The depth of oil penetration into the substrate as a result of treatment, and water quality levels (to test for the presence of TPH and/or Corexit 9580M2) were also compared between treatment and control sites.<sup>63</sup>

Following the final Smith Island test on 11 August, the R&D Committee recommended to the FOSC (unanimously, but for Exxon which was represented) that interim wide-scale use of Corexit 9580M2 in the cleanup be denied.<sup>64</sup> Despite the emphasis on toxicity in previous tests and in the controversy over this one, the R&D Committee decision was based not on toxicity data, but on the observed containment and recovery during the test. As committee-chair Sharon Christopherson wrote:

[I]ncreased operational effectiveness with the use of Corexit 9580 has not been adequately documented at this time to justify the additional environmental risk....Specifically, the maximum and average total oil recovered per square foot of shoreline treated...compared to the...water-washed shoreline did not indicate an increased efficiency. The average oil recovered per hour of treatment time was also lower.<sup>65</sup>

Ms. Christopherson's memo to the FOSC also noted that mobilization and demobilization times were higher for the Corexit test-sites. And, in what would become a controversy in its own right, a brown, subsurface turbidity plume that was observed to be escaping from the secondary booms was suggested by ADEC and EPA to be possibly composed of dispersed and entrained oil, introducing new concerns for the spread of toxicity from treated areas.<sup>66</sup> Exxon, on the other hand, claimed the turbidity observed in the water column was simply silt.<sup>67</sup> No definitive evidence on the composition of these plumes appears ever to have been produced.

62. *Ibid.* The insistence on demonstrated effectiveness in containment and recovery emerged from the debate earlier in the summer over the appropriateness of using shoreline dispersants.

63. Exxon Research and Engineering Company, "Large-Scale Field Test of Corexit 9580, Smith Island, August 8-14, 1989" (see appendix A [Monitoring of a Large-Scale Field Test of Modified Corexit 9580] by Interagency Shoreline R&D Committee).

64. S. Christopherson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 14 Aug. 1989, no. C1563, FOSC Exxon Valdez Archive.

65. *Ibid.*

66. *Ibid.*; and A. L. Ewing (EPA), letter to Vice Adm. C. E. Robbins, 19 Sept. 1989, no. C2468, FOSC Exxon Valdez Archive.

67. S. Christopherson (NOAA), interview by Dr. T. Leschine (FOSC staff), Seattle, 28 June 1991, no. F734, notes, FOSC Exxon Valdez Archive.

Rear Admiral David Ciancaglini, acting in temporary relief of Vice Admiral Robbins, accepted the R&D Committee's recommendation and disapproved Exxon's request for interim wide-scale use. He cited the "insufficient gain in both efficiency and amount of oil recovered" as the basic reasons for this denial.<sup>68</sup>

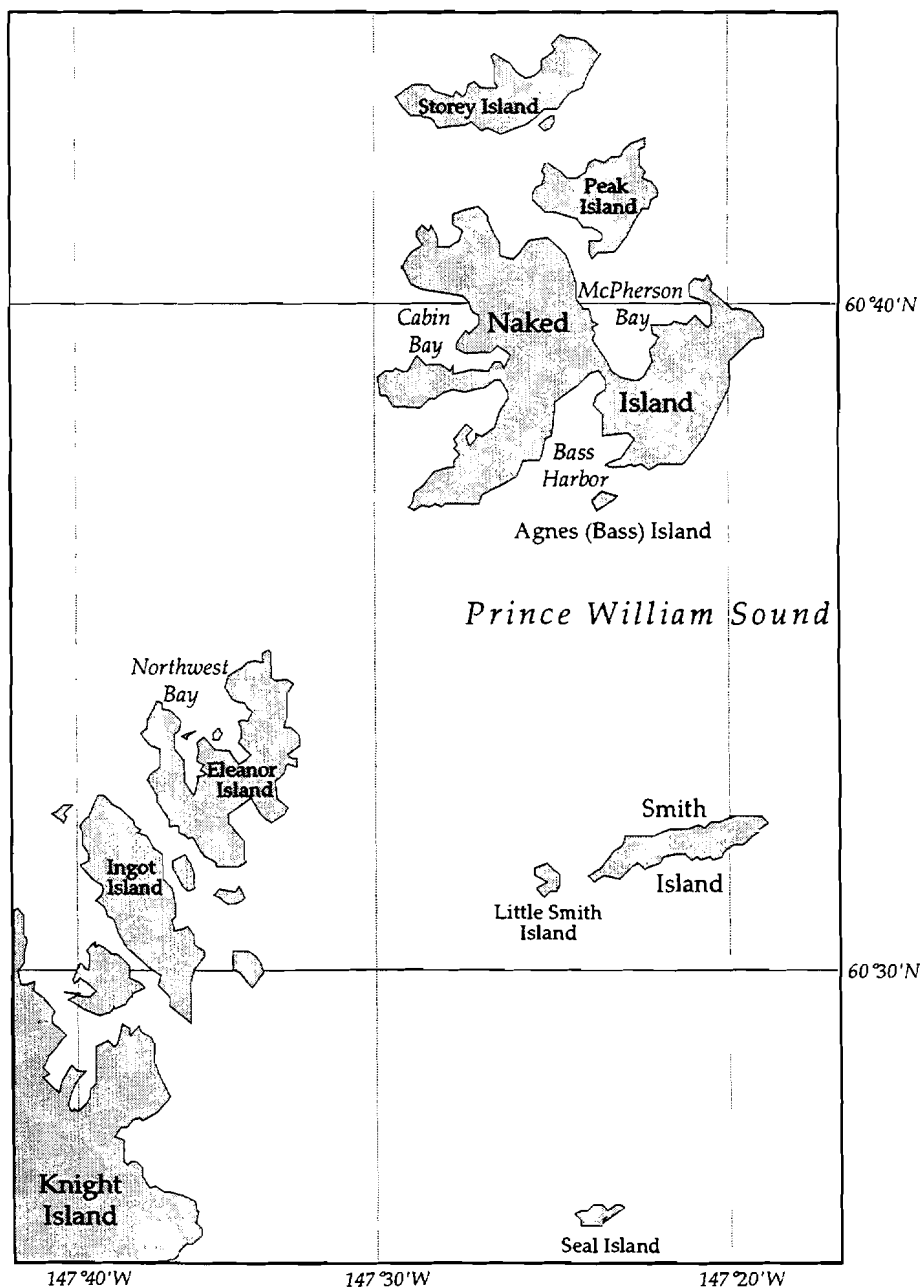


Figure 9.5. Smith Island and neighboring islands.

68. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 14 Aug. 1989, no. C1589, FOSC Exxon Valdez Archive.

Exxon's Otto Harrison reacted strongly. He felt that the committee's recommendation reflected:

[B]ias...against the use of cleaning chemicals....Visual observation...shows clearly the improved cleaning capability....This is a major tool in our kit, an environmentally sound tool, a tool which allows timely completion. It is difficult to visualize how any group could give up on using this tool....[T]his entire process has resulted in delays, wasted testing and slowing down the cleanup process.<sup>69</sup>

On the same day, Mr. Harrison petitioned the FOSC to consider a modified request for permission to use Corexit. The request included additional data demonstrating that Corexit could remove oil more quickly from rock surfaces and surficial sediments than water-washing alone. But the Interagency Shoreline Cleanup Committee (ISCC) found that Exxon's data did not demonstrate that more oil could be *recovered* through use of Corexit. The committee made it clear to the FOSC that approval for Corexit use should be coupled with demonstrable evidence of "a significant increase in the amount of oil removed from the environment."<sup>70</sup> The problem was, the ISCC felt, that in heavily oiled areas, most oil was now in the subsurface where Corexit could not reach it. The ISCC disputed Otto Harrison's contention that denial of the use of Corexit was tantamount to denying Exxon the ability to achieve its cleanup goals by 15 September:

Data have not been presented which would substantiate Exxon's position that Corexit is needed to meet the September 15 target for completion of shoreline treatment of Prince William Sound.<sup>71</sup>

Rear Admiral Ciancaglini again denied Exxon's request.<sup>72</sup>

In a later report on the Smith Island test prepared by Exxon Research and Engineering Company, fault was found with both the conceptual basis for, and the execution of, the testing that had led the company's attempt to win approval for Corexit to this point:

In Exxon's view, [the R&D Committee's] performance criterion was not appropriate since the beach sites cannot be assumed to all have the same initial amount of recoverable oil. In addition, the high variability of oil loading on beaches makes quantitative interpretation of data very tenuous.<sup>73</sup>

69. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 17 Aug. 1989, no. C1681, FOSC Exxon Valdez Archive.

70. S. Christopherson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 19 Aug. 1989, no. C69, FOSC Exxon Valdez Archive.

71. Ibid.

72. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 19 Aug. 1989, no. C1220, FOSC Exxon Valdez Archive. The door was left open for further requests for testing from Exxon, however, by Coast Guard Commandant Paul Yost, who discussed the matter directly with Bill Stevens, president of Exxon Co., USA (Adm. P. Yost, memorandum to the secretary of transportation, 16 Aug. 1989, no. C2312, FOSC Exxon Valdez Archive). Secretary Skinner informed President Bush, who is assumed to have concurred with this offer (S. K. Skinner [DOT], memorandum to the president, 15 Aug. 1989, C2312, FOSC Exxon Valdez Archive). Yost's offer was based on the understanding that the effectiveness of Corexit, and not toxicity, was at issue. Skinner cautioned the president, "There may be an element in Exxon's protests of spreading the blame for a failure to complete the job in Alaska." Writer Art Davidson attributes similar views to ADEC Commissioner Dennis Kelso, who likened Exxon's strategy to that employed by Amoco in denying liability for damages incurred in the *Amoco Cadiz* spill (A. Davidson, *In the Wake of the Exxon Valdez: The Devastating Impact of the Alaska Oil Spill* [San Francisco: Sierra Club Books, 1990], 197-198).

73. Exxon Research and Engineering Company, Executive Summary—Overall Conclusions, in "Large-Scale Field Test of Corexit 9580, Smith Island," 8-14 Aug. 1989.

Exxon's analysts also felt that the inexperience of the beach crews and monitors had hampered data collection and the high-energy nature of the site selected had made containment and skimming inherently difficult.<sup>74</sup>

Nevertheless, on 22 August, Exxon submitted yet another proposal for limited, phased implementation of Corexit 9580M2 beach cleaner. The proposed treatments would take place at Smith Island and Point Helen, which were very heavily oiled over a wide area and had still not been treated. The Smith Island site had been treated previously, but had since been subject to considerable re-oiling.<sup>75</sup>

After much discussion, both the R&D Committee and the RRT recommended approval of the test, with some significant modifications. Following the R&D Committee's recommendation, a single-crew application to a single site on Smith Island would form the basis for decisions about whether to expand the treatment to the level proposed by Exxon.<sup>76</sup> This key difference appears to account for why this proposal met with approval, while other similar requests had been denied.

Rear Admiral Ciancaglini granted approval for what he explicitly termed a "test," to be monitored by both ADEC and the Coast Guard.<sup>77</sup> Part of the rationale for his further limiting the test to the north shore of Smith Island was strong opposition to testing at Point Helen by outside interested parties, including Native groups. The Prince William Sound Aquaculture Association saw the Point Helen test as a direct threat to the Sawmill Bay Hatchery,<sup>78</sup> while the Tatitlek Village Council did not want to see chemical cleaners applied to subsistence hunting lands.<sup>79</sup> Chenega Corporation, owner of lands adjacent to the Point Helen site, also opposed tests there.<sup>80</sup> The R&D Committee, in recommending that the test area be expanded to Point Helen if judged successful at Smith Island, strongly urged that Chenega Village Corporation representatives be invited to observe the Smith Island tests.<sup>81</sup>

The second series of Corexit 9580M2 tests on Smith Island began on 28 August and were terminated on 6 September. One difference from the previous Smith Island tests was the use of large quantities of snare boom, which had been determined to be more effective in recovering loosened oil and oil/Corexit mixture than other types of boom. Nevertheless, due to light storm conditions during the test, recovery was not particularly successful. Poor weather also contributed to problems with containment. In addition, the use of snare booms for oil recovery made quantification of the

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74. Ibid.

75. Exxon, "Limited Operational Use of Corexit 9580 Beach Cleaner," 22 Aug. 1989, no. C1826, FOSC Exxon Valdez Archive.

76. J. Robinson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 23 Aug. 1989, C1854, FOSC Exxon Valdez Archive.

77. Rear Adm. D. E. Ciancaglini, memorandum to RRT, 23 Aug. 1989, C1854, FOSC Exxon Valdez Archive.

78. J. McMullen (Prince William Sound Aquaculture Association), letter to Rear Adm. D. E. Ciancaglini, 25 Aug. 1989, no. C2282, FOSC Exxon Valdez Archive.

79. G. Kompkoff (Tatitlek Village Council president), letter to Rear Adm. D. E. Ciancaglini, 23 Aug. 1989, no. C1889, FOSC Exxon Valdez Archive.

80. Ciancaglini, letter to RRT, 23 Aug. 1989.

81. J. Robinson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 23 Aug. 1989.

recovered oil more difficult.<sup>82</sup> As with the earlier tests, recovery and containment were the major criteria used to evaluate the performance of Corexit 9580M2.

Following this second series of Corexit 9580M2 tests on Smith Island, ADEC recommended to the FOSC that operational testing of the shoreline dispersant be terminated. The agency cited a number of problems, including the ubiquitous brownish-red plume that had been neither contained nor characterized in the testing done to date, and an oil-recovery rate that was similar to, if not actually less than, that of standard warm-water washing methods. Moreover, wrote state OSC Steve Provant:

We find that Corexit cleans and disperses oil off the surface of shoreline rocks but does not clean the underside of the rocks. Corexit's ability to clean subsurface oil could not be determined but based on the amount of oil recovered it does not appear that Corexit is effective in removing subsurface oil. Despite special care Exxon still could not effectively contain and recover oil removed from Corexit 9580 treated shorelines.<sup>83</sup>

With the concurrence of both EPA and ADEC, Vice Admiral Robbins suspended further operational testing of Corexit 9580M2.<sup>84</sup> He gave two reasons:

First, there are no further heavily oiled beaches in suitable locations for the potential use of Corexit and second, I am not convinced as to the effectiveness of the cleaning agent. While the surface of the shoreline was apparently cleaned by Corexit application, the amount of oil recovered was not sufficient to conclusively determine its effectiveness.<sup>85</sup>

The EPA concurred with Robbins's decision, stating:

The agency's position regarding Corexit 9580M2 is that there is insufficient evidence demonstrating that its use would significantly improve oil removal and recovery operations to justify wide scale use.<sup>86</sup>

Agency representative Al Ewing questioned, however, whether Corexit use wasn't being ruled out before testing had resolved several of the important questions that had been raised, particularly with regard to the subsurface plumes. Admiral Robbins responded in a way that made clear his view that, regardless of the many unanswered questions that the Corexit tests had generated, Corexit, or something like it, should continue to undergo development for possible future use:

The plume has yet to be identified as to its characteristic or content. Initial sampling I'm told, tested very low in hydrocarbons and it appeared to disperse rather rapidly. Had I based my termination order on the results of the 'plume' testing, my decision would probably have been contested.

As it stands today, I feel that Corexit or something like it shouldn't be discarded out of hand. We know that it cleans rocks but we aren't sure where the oil goes or what its impact will be.

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82. Exxon Research and Engineering Company, "Operational Field Test of Corexit 9580, Smith Island, August 28–September 6, 1989" (report no. EE.3DM.90, 24 Jan. 1990), vol. 3. Snare booms are composed of adsorbent or oil attracting material and differ from absorbents in that oil is not absorbed into the material, but attaches or clings to it.

83. S. Provant (ADEC), letter to Vice Adm. C. E. Robbins, 6 Sept. 1989, no. C2122, FOSC Exxon Valdez Archive.

84. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 10 Sept. 1989, no. C2385, FOSC Exxon Valdez Archive.

85. *Ibid.*

86. Ewing, letter to Robbins, 19 Sept. 1989.

I would like to see Exxon continue with Corexit experimentation as well as other methods that may be successful in subsurface oil removal. I am not optimistic that they will, however, in view of the discouraging process we have put them through this year....[P]revious spills throughout the world have left much oil beneath the surface because there was no good way to get it out. I strongly urge that EPA and Coast Guard combine their efforts in the future to find better ways of cleaning shorelines.<sup>87</sup>

Reflecting on the events of 1989, Pacific Area Strike Team commanding officer Gary Reiter felt that the dynamics of the Corexit-testing debate had tipped against use of the chemical well before the last series of tests was begun.<sup>88</sup> The efficiency of the flush and wash techniques against which Corexit was being compared had increased steadily through the summer, as a result of experience with their use. By contrast, the strict scientific protocols that governed the Corexit tests left little room for learning from experience with use of the chemical in the field. By mid-August, he had become convinced that Exxon could never develop adequate containment and recovery techniques for the dispersed oil coming off beaches in time to allow use of the product during the 1989 cleanup season, even as Exxon was preparing its case for another round of tests.<sup>89</sup>

Reiter's detailed summary of the tests themselves is telling of the enormous difficulties faced in trying to perform to the standards demanded by scientific protocols in the midst of an oil-spill cleanup and in the face of considerable animosity among agencies whose cooperation was essential if testing was to turn into action. The Chenega Corporation representative never appeared at the Smith Island tests, and state OSC Provant, who had direct authority for the state approval necessary for any further use of Corexit, took scant notice of events in the field. State representatives at the tests expressed views that previous tests had virtually sealed the case against the cleaner, even as the current round of tests was underway.<sup>90</sup>

The Smith Island site had too little oil remaining on its surface for much oil recovery to occur, no matter how efficacious Corexit was at oil removal, in Reiter's view, and light rain on several test days washed the cleaner away before it could have much effect on oiled surfaces. Winds, waves, skimmer breakdowns, and a persistent longshore current that would not have existed had a more sheltered test-site been available, all contributed to difficulties with containment and recovery, and the troublesome subsurface plumes observed in earlier tests were again observed evading both primary and secondary containment booms.<sup>91</sup>

It appears that these last tests occurred too late in the season for the cleaner to have been usefully employed even if they had been successful, and were too constrained in design and hobbled in implementation to provide a definitive test of the benefits of Corexit in the first place. Perhaps even more damning to the ability of the tests to inform usefully the decision they were designed to support, it appears that at least some

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87. Vice Adm. C. E. Robbins, letter to A. L. Ewing (EPA), 27 Sept. 1989, no. C2469, FOSC Exxon Valdez Archive.

88. G. A. Reiter (PST), memorandum to FOSC, 28 Oct. 1989, no. W154, FOSC Exxon Valdez Archive.

89. Ibid.

90. Ibid.

91. Ibid.

of the parties who assented to their taking place were in fact little disposed to allowing the results of the test to influence their decision on whether to permit Corexit's use.

### COREXIT IN 1990

Despite the negative outcome of Exxon's 1989 attempt to gain approval for use of Corexit as a shoreline cleaner, the door was left open for Corexit use in 1990 once Exxon had committed to return to the cleanup in that year. Not only was Vice Admiral Robbins optimistic about the future of shoreline cleaners, but in late September state OSC Provant wrote to Otto Harrison suggesting that ADEC would be willing to reconsider its position on Corexit. Harrison responded enthusiastically, pointing out that Exxon had already committed to an extensive winter research program that would involve tests of a variety of shoreline cleaners.<sup>92</sup> He expressed a willingness to fund research which the state might do in support of the larger research and development effort. Exxon's own research effort would include an ambitious attempt to simulate in the laboratory the plumes that had been observed escaping from Corexit-treated shorelines in the field.<sup>93</sup>

By late March, ADEC had conducted its own screening of chemical beach-cleaners and identified one, Re-Entry KNI, which it felt Exxon should test against Corexit 9580. Exxon arranged for a test at its corporate research facilities in Clinton, N.J., to take place on 25–26 April.<sup>94</sup> Dr. Robert Hiltabrand, of the Coast Guard Research and Development Center in Groton, was selected as a neutral observer of the test. While the test went off as planned, Dr. Hiltabrand reported that problems inherent in testing in tanks made extrapolation of the results to field conditions impossible, in his view.<sup>95</sup>

In April, Exxon Research and Engineering Company released the last two volumes of a comprehensive five-volume report it had been developing on Corexit 9580M2.<sup>96</sup> Soon after, Exxon's Otto Harrison once more requested approval from the FOSC for use of Corexit 9580M2, this time in conjunction with "spot washing" on shorelines where extensively weathered surface oil was now to be found.<sup>97</sup> Mr. Harrison argued that:

Presoaking with the beachcleaner will allow a reduction in wash water temperature from about 160° to about 100°F, reducing safety risks to shoreline workers as well as the risk of damaging healthy intertidal biota. In contrast to the large-scale test applications of the beachcleaner in 1989, spot washing in 1990 will cover only small areas, typically no more than several hundred square feet on any given shoreline subdivision. With a nominal application rate of one gallon per hundred square feet, only several gallons of beachcleaner will be applied in a given area.<sup>98</sup>

92. O. Harrison (Exxon), letter to S. Provant (ADEC), 10 Oct. 1989, no. W127, FOSC Exxon Valdez Archive.

93. Exxon Research and Engineering Company, "Corexit 9580 Beachcleaner 1989/90 Winter Studies," 20 April 1990, vol. 4, no. W757, FOSC Exxon Valdez Archive.

94. J. B. Wilkinson (Exxon), letter to R. Bayliss (ADEC), 17 Apr. 1990, no. W751, FOSC Exxon Valdez Archive.

95. Dr. R. R. Hiltabrand, memorandum to chief (MEP), 14 May 1990, no. W1773, FOSC Exxon Valdez Archive.

96. Exxon Research and Engineering Company, "Corexit 9580 Beachcleaner 1989/90 Winter Studies"; and Exxon Biomedical Sciences, Inc., "Corexit 9580, Toxicity Evaluation," 24 April 1990, vol. 5, no. W757, FOSC Exxon Valdez Archive.

97. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 26 Apr. 1990, no. W1637, FOSC Exxon Valdez Archive.

98. *Ibid.*



Mr. Harrison's letter did not address how the problems of containment and recovery, which had been so much at issue in 1989, would be dealt with under this new proposal. A later communication from Rear Admiral Ciancaglini to the RRT indicated, however, that the plan was to rely on the use of simple nearshore sorbents as much as possible. Skimmers and harbor boom would be employed only as required by specific operational conditions.<sup>99</sup>

The FOSC requested that NOAA review Exxon's research results to advise him on whether they supported Exxon's contentions about the proposed spot-washing, and he forwarded Exxon's request to the RRT.<sup>100</sup> The RRT, which, as before, was bound to pass forward a recommendation in consonance with the positions taken by EPA and ADEC, again opted for testing, however:

[T]he two agencies which control its [Corexit's] approval/disapproval (ADEC and EPA), feel that initially its use should be limited to several (not more than five) sites, to test whether it increases removal efficiency without decreasing its recovery ability....ADEC will monitor the test sites to see whether it will remove weathered oil at a significantly lower water temperature than using only hot water application. ADEC states [that] these sites are to be agreed upon by FOSC, ADEC, and Exxon.<sup>101</sup>

Whether Corexit would be approved for the wide-scale use Exxon had proposed would depend on its winning approval from both EPA and ADEC, and the testing requirement, couched as it was in terms of Corexit's demonstrated efficacy in field use in comparison to water-washing alone, sounded much like the scenario that had doomed Corexit in 1989.

A letter from Rear Admiral Ciancaglini to the RRT, sent the next week, amplified the rationale behind the request for wide-scale Corexit use that Exxon had originally made, and provided details of the plan that had been developed since then. The FOSC asked that the RRT approve the request as originally submitted by Exxon.<sup>102</sup>

The letter summarized a number of results from Exxon's winter laboratory studies. The tests had shown that Corexit plus water at 100°F was at least twice as effective at oil removal as hot water (160°F) alone. Not only could the high-temperature water that had been shown to be damaging to intertidal communities be avoided, but the results suggested that it might be possible to use lower flush volumes as well, another factor that could lessen the thermal impact on the intertidal biota. The spot-washing would be restricted to areas near the water line to prevent penetration of the solvent-oil mixture into the substrate; parts of 72 of the 974 subdivisions reviewed by the Technical Advisory Group (TAG) up to that time were proposed.<sup>103</sup>

Rear Admiral Ciancaglini's initiative resulted in modest gains on behalf of Corexit use. While both the EPA and ADEC continued to insist on the testing they had proposed,

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99. Rear Adm. D. E. Ciancaglini, letter to Capt. D. E. Bodron (RRT), 18 May 1990, no. W1885, FOSC Exxon Valdez Archive.

100. Capt. D. E. Bodron (RRT), memorandum to RRT members, 4 May 1990, no. W1942, FOSC Exxon Valdez Archive.

101. Capt. D. E. Bodron (RRT), memorandum to FOSC, 11 May 1990, no. W1828, FOSC Exxon Valdez Archive.

102. Ciancaglini, letter to Bodron, 18 May 1990.

103. *Ibid.*

the agencies were now willing to couple a successful outcome of the tests with approval for the wider use Exxon had envisioned:

Provided that Corexit 9580 increases removal efficiency and can be picked up, and that monitoring does not indicate significant problems, we anticipate that approval for use of Corexit 9580, as specified in Exxon's proposal letters of April 26 and March 17, will be granted for the remaining 67 sites. Approval would be contingent on the concurrence of land managers for the specific sites.<sup>104</sup>

The EPA stance was similar,<sup>105</sup> and the conditions imposed by the FOSC on the tests, particularly with respect to determining the efficacy of oil removal and the effectiveness of its recovery,<sup>106</sup> were essentially those developed by ADEC.<sup>107</sup> ADEC's new OSC, Randy Bayliss, wrote that approval for the wide-scale use of the treatment method would be granted upon the demonstration that the shoreline dispersant:

(1) will remove weathered oil at a significantly lower temperature than with hot water alone [*sic*] and (2) that the loosened Corexit/oil mixture will be captured by the sorbent materials or other measures.<sup>108</sup>

ADEC's report still questioned Exxon's claim that the oil/Corexit mixture washing from treated shorelines was recoverable utilizing adsorbent and absorbent materials. Observations to the contrary from the 1989 tests were cited.<sup>109</sup> While the agency was attracted by the idea of lowering water temperatures, thereby diminishing impacts on intertidal biota, it continued to show concern for chemical toxicity, focusing now on the possibility of sublethal and chronic effects. In order to generate data appropriate to these concerns, the agency called for in situ sea urchin and salmon testing, and for intertidal video surveys conducted before, just after, and ten days after testing. The agency said that the additional toxicity testing was a necessary condition for it to grant approval for wide-scale use.<sup>110</sup>

NOAA's Jacqui Michel enumerated a number of concerns with the test protocols developed by ADEC in a letter to the FOSC.<sup>111</sup> Quantification of oil recovery by pom-poms in the Corexit versus hot water comparisons was likely to give poor results, as was quantification of oil penetration into the sediments. The sea urchin and caged salmon studies were also of questionable value and validity. She closed with a somewhat tentative blessing of the experiments nonetheless:

These requirements are more than we would recommend but still within the realm of what would be required under a very rigorous monitoring plan.<sup>112</sup>

104. R. Bayliss (ADEC), letter to Capt. D. E. Bodron (RRT), 5 June 1990, no. W1542, FOSC Exxon Valdez Archive.

105. A. L. Ewing (EPA), letter to Capt. D. E. Bodron (RRT), 4 June 1990, no. W1540, FOSC Exxon Valdez Archive.

106. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 8 June 1990, no. W1829, FOSC Exxon Valdez Archive.

107. ADEC Oil Spill Response Center, "Corexit 9580: Report and Recommendation," 14 June 1990, no. W1196, FOSC Exxon Valdez Archive. This fourteen-page report defines the agency's criteria for applying the results of the Corexit 9580M2 tests to the decision on Corexit use. Sources reviewed and tests conducted by the agency in support of its positions are summarized.

108. Bayliss, letter to Bodron, 5 June 1990.

109. ADEC Oil Spill Response Center, "Corexit 9580: Report and Recommendation."

110. *Ibid.*

111. J. Michel (NOAA), letter to Capt. D. Zawadzki, 16 June 1990, no. W1800, FOSC Exxon Valdez Archive.

112. *Ibid.*

The first of the Corexit 9580M2 spot-washing tests was conducted in the Bay of Isles, Knight Island, on 23 June; the second occurred north of Herring Bay, also on Knight Island, on 14 July.<sup>113</sup> The second test had originally been scheduled for Sleepy Bay, on the northern tip of Latouche Island, but had to be relocated and rescheduled because of strong protest from Chenega Village Corporation.<sup>114</sup> Environmental groups, including the Sierra Club Legal Defense Fund and the Prince William Sound Conservation Alliance, continued to oppose the tests.<sup>115</sup> In each test, following a directive of FOSC Rear Admiral Ciancaglini, the emphasis in comparing the two techniques was to be on “visual science” rather than on sophisticated sampling.<sup>116</sup>

Exxon contended that the tests were a success; presoaking the oiled surface with Corexit 9580M2 had resulted in more oil being washed from the rocks utilizing lower temperature water than had been the case using hot water alone. In addition the company found that recovery of the loosened oil and oil/Corexit mixture had been effective as well. Based on these contentions, Exxon requested, on 17 July, that Rear Admiral Ciancaglini approve operational use of Corexit 9580M2 in conjunction with spot-washing whenever spot-washing was called for in a work order.<sup>117</sup>

In making this request Mr. Harrison had in actuality further limited the context in which Corexit would be used. He proposed that it be used only on large rocks and boulders, primarily in areas where Inipol was also being used in the ongoing bioremediation program.<sup>118</sup> He estimated that, since only thirty work sites remained in which spot-washing had been specified in the work order, the total use of Corexit would be on the order of one hundred gallons.

Much as in previous tests, however, ADEC drew different conclusions from what had transpired. In a letter to Captain Bodron of the RRT sent the next day, state OSC Randy Bayliss contended that both tests had gone awry. In the Bay of Isles test, no attempt had been made to recover the loosened oil/Corexit mixture and water temperatures had not been controlled, he said.<sup>119</sup> At Herring Bay, while Corexit had enhanced solvent action, so had the hot-water wash and the recovery methods used with Corexit had not been superior to those for hot-water washing alone.<sup>120</sup> He declined to approve Corexit use, but once again left the door open for continued testing. Lacking approval from the state

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113. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 17 July 1990, no. W1759, FOSC Exxon Valdez Archive.

114. G. Evanoff (Chenega Village Corporation), memorandum to B. Fiocco and H. Jahns (Exxon), 30 June 1990, no. W1857, FOSC Exxon Valdez Archive. Land manager approval for the use of Corexit was a prerequisite established by the RRT.

115. T. Waldo (Sierra Club Legal Defense Fund), letter to C. Lautenberger (EPA), 4 June 1990, no. W1543; and Prince William Sound Conservation Alliance, “Comments on Considering, Again, the Use of Corexit 9580 on Shorelines,” 3 July 1990, no. W1564, FOSC Exxon Valdez Archive.

116. Ciancaglini, letter to Harrison, 8 June 1990.

117. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 17 July 1990, no. W1759, FOSC Exxon Valdez Archive.

118. Ibid. The idea was to complement the use of Inipol, which was not permitted on rock walls or large boulders.

119. R. Bayliss (ADEC), letter to Capt. D. E. Bodron (RRT), 18 July 1990, no. W1706, FOSC Exxon Valdez Archive. Otto Harrison agreed that the water temperature had not reached the target 110°F, but pointed out that the actual temperature in the Corexit treatment was nevertheless 40°F cooler than in the hot water wash (135°F vs. 175°F). He denied outright the contention that no attempt had been made to contain the oil, pointing out that clean snare boom and sorbent pads placed at the beginning of the test were visibly stained at the end of it (O. Harrison [Exxon], letter to R. Bayliss [ADEC], 30 July 1990, no. W1370, FOSC Exxon Valdez Archive).

120. Bayliss, letter to Bodron, 18 July 1990. Regarding the Herring Bay test and Bayliss’s contention that recovery with Corexit was no more effective than without it, Otto Harrison pointed out that demonstrating *more effective* recovery had neither been a goal of the tests nor a requirement for Corexit approval imposed by ADEC (Harrison, letter to Bayliss, 30 July 1990).

of Alaska, Rear Admiral Ciancaglini soon denied formally Exxon's pending request for operational use of Corexit 9580.<sup>121</sup>

Exxon took this latest ADEC denial as the proverbial "last straw"; the company announced, on 20 July, that it would abandon its attempts to seek approval for operational use of Corexit 9580M2. The company had concluded that ADEC's standard for Corexit approval had become a moving target, and that further tests would do little to change the state's position. As Otto Harrison wrote in reply to Randy Bayliss:

For the record, we must point out that the reasons cited in your letter are not valid. In our view, the State is using flawed arguments to justify its predisposition against the use of chemicals in spite of successful demonstrations. Additional demonstrations would be futile insofar as convincing the State to adopt a more reasonable posture.

ADECs disapproval of Corexit 9580 is inconsistent with [its] criteria....[W]e have made it clear that the conditions under which we propose to use Corexit 9580 are similar to those present in the demonstrations. Thus, further demonstrations under the same conditions would make little sense in view of the State's changed standard for judging success or failure.<sup>122</sup>

Thus ended one of the most contentious and drawn-out debates of the *Exxon Valdez* spill response.

## SUMMARY

The marriage between science and politics that evolved over the course of the *Exxon Valdez* response was a fragile one. In the case of Exxon's fifteen-month-long effort to win approval to use Corexit, the chemistry between the two seems not to have served well the interests of efficient and effective decision making. With the benefits of hindsight, the background information EPA's Emergency Response Team furnished to the FOSC in April 1989 should have been warning enough that approval for chemical cleaners like Corexit was unlikely to be easy. But EPA itself, in the advice it transmitted to the FOSC, urged that the opportunity presented by the spill for testing shoreline cleaners be taken advantage of.

Exxon felt that tools like shoreline cleaners, which offered potential efficiency gains in what was clearly going to be a protracted and costly cleanup effort, were well worth pushing for even if considerable resources had to be thrown into making their case. The company's philosophy was to expedite wherever possible, and it seems to have assumed, at least initially, that other organizations shared that view. Its position was a natural outgrowth of its "can do" attitude and the technical-engineering orientation it brought to problem solving.

That political factors were going to influence decision making on shoreline cleaners became apparent as the first test of Corexit 7664 went forward. The conditions imposed on the test by the FOSC, developed in consultation with the RRT agencies whose

121. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 24 July 1990, no. W1726, FOSC Exxon Valdez Archive.

122. Harrison, letter to Bayliss, 30 July 1990.

approval was essential for any use of shoreline dispersants, showed the influence of much broader concern over using chemicals to treat shorelines. The FOSC was left with little choice but to adopt a highly cautionary approach.

The involvement of the R&D Committee in the approval process may in retrospect be seen as having contributed to the demise of Corexit while providing definitive answers to few if any of the important questions upon which its fate was supposed to hinge. The ever-more-elaborate testing requirements developed by the R&D Committee and other science advisory groups seem to have soon become dissociated from what was really practical to demonstrate under the conditions which they and the forces of nature imposed on trials in the field.

The R&D Committee too may have become hostage to political forces; co-chair Sharon Christopherson felt that ADEC in particular often succeeded in imposing conditions beyond what the committee as a whole felt were sufficient to define the efficacy and safety of products being tested.<sup>123</sup> Co-chair Jacqui Michel, while endorsing ADEC's "very rigorous" monitoring program for the 1990 Corexit spot-washing tests, did so in spite of what seem to have been substantial doubts about whether the tests were capable of demonstrating what they were intended to show.<sup>124</sup> It is not clear whether the doubts that experienced field personnel like the Pacific Area Strike Team's Gary Reiter had about the direction Corexit testing was taking were communicated effectively and in timely fashion to the levels where decisions were being made.

The EPA seems at times to have been obsessively bureaucratic in its thinking, seemingly concerned with fulfilling the details of headquarters-originated mandates at the expense of effective participation in decision making in the field. Much more important to the eventual outcome of the Corexit debate was the position of ADEC, however. The Alaska Department of Environmental Conservation may well have gone into what became a protracted decision process with honest intentions, and been sincere in encouraging Exxon to try again after having denied the permission it sought for the 1989 cleanup. It is harder to argue, however, that the agency was simply responding dispassionately to a considered weighing of the scientific evidence when it denied Exxon's spot washing proposal in July of 1990. A serious reading of the correspondence between Exxon, ADEC, the RRT, and the FOSC leads almost inescapably to the conclusion that State OSC Randy Bayliss had indeed changed the rules of the game to justify the "no" decision he made on Corexit use.

The one hundred gallons or so of Corexit that Exxon would have used in spot washing over the entire response area was about a third the amount it had used in the Smith Island test series alone in 1989. Demanding field verification of laboratory results prior to approval, given the record of field-testing up to that time, was tantamount to imposing approval conditions that could not be met. Perhaps unwittingly, Exxon found itself in the position of being micromanaged in its own testing programs by ADEC and other agencies.

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123. Christopherson, interview, 28 June 1991.

124. Michel, letter to Zawadzki, 16 June 1990.

Native groups and the influential Prince William Sound Conservation Alliance were implacably opposed to the use of chemical shoreline cleaners. They were not likely to be appeased by even positive results from field testing, and with the influence they appeared to have on ADEC's thinking, a risk averse state agency was not likely to grant approval. Exxon's Otto Harrison characterized the mass balance testing that was used to determine the relative recovery rates of Corexit versus hot-water washing as "technical inanity,"<sup>125</sup> but assented to go forward with testing defined in those terms nonetheless.

Ultimately, Corexit's problem may have been that, if it ever was the right tool, it was never available for use at the right time. Unlike bioremediation, it couldn't address the subsurface oiling which, by late 1990, was increasingly being seen as the spill's primary remaining problem. As a result, continued requests for approval served in part to reinforce notions that Exxon was more interested in cosmetic effects than in getting oil out of the environment. Moreover, Corexit's image as a toxic chemical made it more like the floating oil dispersants that had been so contested early in the response than it was like the bioremediation compounds that did come into wide use in the response. The Environmental Protection Agency's early, vocal, and consistent support for bioremediation, which originated in its own R&D labs, was conspicuously absent in the efforts of the field level decision makers who represented the agency in the Corexit dispute. The extra burden of proof Corexit faced sealed its fate once political forces began to swirl around the question of whether or not its use should be permitted in the cleanup.

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125. O. Harrison (Exxon), interview by Lt. Comdr. R. Gaunt, Dr. T. Leschine (FOSC staff), and A. van Emmerik (FOSC staff), 24 June 1992, Anchorage, no. F670, tape, FOSC Exxon Valdez Archive.



## CHAPTER 10. BIOREMEDIATION

### OVERVIEW

The National Contingency Plan (NCP) encompasses bioremediation compounds and chemical shoreline-cleaners within the same decision framework. Approval for the use of biological agents or oil degradation-enhancing fertilizers in an oil spill response must be sought from the Regional Response Team (RRT), and if preapproval has not been granted, the U.S. Environmental Protection Agency (EPA) and state concurrence is required before an Federal On Scene Coordinator (FOSC) can authorize their use.

Bioremediation became one of the central shoreline-treatment technologies employed during the *Exxon Valdez* spill response. Testing and limited application early in 1989 led to widespread use in late 1989 and thereafter. By the end of the 1989 cleanup season, Exxon had treated an estimated seventy-four miles of shoreline with bioremediation compounds, "the largest bioremediation project ever conducted," according to EPA estimates.<sup>1</sup> According to the U.S. Congress Office of Technology Assessment, by early 1991 the number of shoreline miles treated by means of bioremediation extended to about 110 miles.<sup>2</sup>

Bioremediation is not a new technology. But the *Exxon Valdez* oil spill was the first to see such widespread use, and as a consequence, has done much to define the treatment methods, offering new insights into the mechanisms by which they work and greatly expanding the research base on their effectiveness.

It is helpful to define biodegradation, the process bioremediation attempts to promote, as well as bioremediation. Biodegradation is the natural process whereby bacteria or other microorganisms alter and break down organic molecules into other substances, such as fatty acids and carbon dioxide. Bioremediation then, is the attempt to increase or enhance natural degradation by adding compounds to the contaminated environment. Included in the realm of bioremediation techniques is the introduction of nutrients (i.e., fertilizers) and "seeding," or the addition of either naturally occurring (either indigenous to the area of the spill or not) or bioengineered microorganisms to the affected environment.<sup>3</sup> These processes can be used either separately or in tandem to enhance the biodegradation of oil.

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1. EPA Office of Research and Development, *Alaskan Oil Spill Bioremediation Project: Update*, EPA/600/8-89/073 (Washington, D.C., July 1990), 13.

2. U.S. Congress Office of Technology Assessment, *Bioremediation for Marine Oil Spills—Background Paper*, OTA-BP-O-70 (Washington, D.C.: Government Printing Office, 1991), 15. Both this statistic and the EPA statistic appear to more accurately reflect the total length of the shoreline segments to which bioremediation compounds were applied (in many cases to very small areas) rather than the actual length of shoreline treated by means of bioremediation. Exxon statistics show that 65,000 gallons of Inipol were applied to nearly 1 million sq. yards. of shoreline, and that 9.4 tons of Customblen were applied to 395,00 sq. yards., in 1989 (Exxon, *Valdez Oil Spill Technology 1989 Operations* [Exxon Production Research Co., 1990]).

3. *Ibid.*, 2.



The addition of microorganisms, especially bioengineered organisms, is relatively less well developed as a practical technique. Research showing that seeding can consistently enhance degradation rates is lacking, and many researchers have felt seeding to be unnecessary when oil-degrading microorganisms already exist in many environments where oil spills occur. Public fears about bioengineered products in general have left agencies like EPA with little incentive to promote their development for use on oil spills.<sup>4</sup> Only nutrient introductions ultimately received widescale application during the *Exxon Valdez* spill response, while the introduction of "foreign" (but otherwise naturally occurring) microorganisms was utilized only in several small tests.

The first use of enhanced microbial degradation of oil dates to at least 1942, when the American Petroleum Institute began to sponsor research on the topic.<sup>5</sup> Although research continued for the next three decades, it was not until the 1980s that the bioremediation method received practical application on oil spills.

The perception of bioremediation as a valid spill-response technology was bolstered by the *Amoco Cadiz* spill in 1978, where biodegradation of the spilled oil was observed to be quite rapid. This was attributed in part to the presence of high levels of nitrogen and phosphorus in the environment as a result of agricultural runoff.<sup>6</sup> These observations may have influenced the decision in 1985 to use the oleophilic<sup>7</sup> fertilizer, Inipol EAP 22, in the clean up of a small diesel spill in Ny-Alesund, Spitsbergen, Norway. The results of this application were inconclusive however, due to the high rate of natural degradation of the diesel fuel.<sup>8</sup>

It has long been recognized that petroleum-degrading microorganisms occur naturally in many ecosystems, including the shorelines affected by the *Exxon Valdez* spill:

The complex community of hydrocarbon degraders that exists in Prince William Sound and the Gulf of Alaska contains numerous organisms that act together to degrade petroleum and its products. The community has evolved over millions of years to degrade hydrocarbons, which are constantly added to the seawater by pine tree droppings and natural petroleum seeps.<sup>9</sup>

The ability of such microorganisms to grow rapidly in response to an oil spill may be limited, however, by the amount of nutrients in the environment. The belief that nutrient limitation was the critical factor inhibiting biologically mediated oil degradation in Prince William Sound was the basis for choosing the addition of fertilizers as the basic strategy for enhancing biodegradation on oiled shorelines.

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4. Ibid., 14–18.

5. C. E. Zobell, "Microbial Degradation of Oil: Present Status, Problems and Perspectives," in *Microbial Degradation of Oil Pollutants* (proceedings of a workshop at Georgia State University, Atlanta, Dec. 1972).

6. R. R. Chianelli et al., "Bioremediation Technology Development and Application to the Alaskan Spill," *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute Pub. no. 4529, 1991), 549.

7. Oleophilic compounds have a propensity to become attached to petroleum molecules, thereby preventing the nutrient formulation from becoming solubilized in the water and rendered ineffective.

8. A. Ladouse and B. Tramier, "Results of 12 Years of Research in Spilled Oil Bioremediation: Inipol EAP 22," *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute Pub. no. 4529, 1991), 577. The French firm of Elf Aquitaine began in the late 1970s to work on a nutrient formulation which would remain in contact with the oil while assisting in natural degradation. This was seen as a major advance in the bioremediation developmental process.

9. Chianelli, 549–50.

A few days after the Alaskan spill, microorganisms began to multiply naturally in response to the presence of oil. With such a bounty of hydrocarbons, however, the ability of these microorganisms to degrade the oil was limited by the availability of nutrients (nitrogen and phosphorus). Without these nutrients, the microorganisms were unable to fully utilize the hydrocarbons as a food source.<sup>10</sup>

Despite the inconclusive findings of the Ny-Alesund experience, this use appears to be one of the reasons behind the Exxon decision to select Inipol as one of the forms of bioremediation it would offer to use to promote biodegradation in Prince William Sound. In fact, shortly after the *Exxon Valdez* ran aground, a task force was put together at Exxon Research and Engineering Company to consider new cleanup technologies. One of these was Inipol EAP 22.<sup>11</sup> In addition, within a month of the spill, the EPA Office of Research and Development (ORD), located in Washington D.C., was exploring Prince William Sound for possible bioremediation test locations.<sup>12</sup>

The choice of a particular nutrient formulation depends on many factors, including the nature and state of the spilled oil and the product's long-term nutrient release rate. Ideally, nutrient formulations will slowly release nitrogen and phosphorus without causing eutrophication, and the nutrients released will be available to the microbial communities of oil degrading organisms over extended periods of time. Two types of bioremediation compounds were ultimately utilized as cleanup technologies on the spill: in addition to the oleophilic fertilizer Inipol EAP 22, Customblen, a granular or dry fertilizer, was employed. Inipol is a microemulsion of nutrients including oleic acid, lauryl phosphate, 2-butoxy-1-ethanol, urea, and water. It is applied in liquid form, usually by means of handheld sprayers.<sup>13/14</sup> Customblen, which can be sprinkled by hand or by hand-operated rotary broadcasters, consists of inorganic nutrients (specifically ammonium nitrate, ammonium phosphate, and calcium phosphate in a 28-8-0 formulation) contained inside a vegetable oil coating.<sup>15</sup> These nutrients are made available in a controlled-release manner.

The effectiveness of the bioremediation compounds used in increasing the natural process of oil degradation became a point of contention as the bioremediation program progressed. Early results of the joint ADEC/EPA/Exxon Bioremediation Program (established during the spring of 1990) suggested, however, that "the fertilizer treatments have produced a sustained two to three fold increase in microbial activity over baseline activity in surface and subsurface sediments."<sup>16</sup> This conclusion came to be the primary basis for increasingly heavy reliance on bioremediation as a cleanup tool. But it was not accepted by all parties and efforts to provide scientifically defensible

10. EPA Office of Research and Development, 5.

11. Ladouse and Tramier, 577.

12. J. Robinson (NOAA), letter to Vice Adm. C. Robbins, 24 Apr. 1989, no. C685, FOSC Exxon Valdez Archive.

13. Ladouse and Tramier, 578. The oleophilic properties of Inipol are the result of the surfactants (or surface active agents) present, which are oleic acid, lauryl phosphate, and 2-butoxy-1-ethanol whose concentrations in the formulation are 26.7%, 23.7%, and 10.8% respectively.

14. J. A. Glaser, A. D. Venosa, and E. J. Opatkin, "Development and Evaluation of Application Techniques for Delivery of Nutrients to Contaminated Shoreline in Prince William Sound," *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute Pub. no. 4529, 1991), 559-60.

15. *Ibid.*

16. R. C. Prince, J. R. Clark, and J. E. Lindstrom, Summary and Conclusions, in "Bioremediation Monitoring Program Interim Report," 10 July 1990, no. W1314, FOSC Exxon Valdez Archive, 59.

estimates of the rate of biodegradation enhancement achieved did not bear fruit until 1992.

Participants in the bioremediation approval process were also concerned with the toxicity and potential ecological effects of bioremediation, especially Inipol. The sudden release of nitrogen and phosphorous from either Inipol or Customblen could possibly produce toxic concentrations of ammonia, or could trigger eutrophication in the poorly mixed waters of protected bays and coves.<sup>17</sup> The grounds for additional concerns about Inipol in particular can be seen in the observations of one National Oceanic and Atmospheric Administration (NOAA) observer:

The real concern from a toxicological perspective is the 2-butoxyethanol. It acts as a solvent carrier or co-surfactant in conjunction with lauryl phosphate to stabilize the emulsion of all five components. Upon contact with living organic matter, the solvent will be detrimental...[but] since it will only be applied to visibly oiled rocks, this should reduce the exposure to infauna.<sup>18</sup>

While the potential for toxicity from 2-butoxyethanol was well understood beforehand,<sup>19</sup> monitoring program results also suggested that butoxyethanol concentrations diminished rapidly following application to oiled shorelines and that butoxyethanol-induced toxicity to marine organisms was unlikely.<sup>20</sup>

Like the debate surrounding the use of the shoreline dispersant Corexit 9580, the twin questions of efficacy and toxicity played large roles in the bioremediation evaluation process.<sup>21</sup> Otherwise the decision environment for the two treatments was quite different. While the major advocate for the use of Corexit was Exxon (whose product it was), a major proponent for bioremediation was the EPA, a factor that appears to have greatly influenced the eventual outcome.

#### TESTING AND APPROVAL OF BIOREMEDIATION IN 1989

In late April 1989, EPA announced that it was looking for a favorable site on which to test bioremediation on Prudhoe Bay crude oil-contaminated shorelines. The proposed test was to include a program for monitoring the test site during the period of maximum biological activity in the sound and a final report on its effectiveness.<sup>22</sup>

The Environmental Protection Agency's 31 May testing proposal included:

First,...a field demonstration to evaluate the use of different nutrient additions (inorganic nitrogen and phosphorus)....The second study, a bioenhancement test, involves laboratory studies and a smaller scale demonstration to evaluate the effectiveness of inoculating contaminated shorelines with indigenous microorganisms which are hydrocarbon-

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17. EPA Office of Research and Development, 11.

18. C. Henry (NOAA), memorandum to D. Kennedy (NOAA), 4 June 1990, no. W1193, FOSC Exxon Valdez Archive.

19. G. G. Hawley, *The Condensed Chemical Dictionary*, 10th ed. (New York: Van Nostrand Reinhold Company, 1981), 433.

20. ADEC, "Bioremediation Fact Sheet," 10 July 1990, no. W1946, FOSC Exxon Valdez Archive.

21. A. Viteri and J. Clark, "State of Alaska Protocol for Approving Chemical Products and Technical Clean Up Methods Proposed for Shoreline Clean Up of the T/V Exxon Valdez Oil Spill," 11 Oct. 1990, no. F303, FOSC Exxon Valdez Archive.

22. Robinson, letter to Robbins, 24 Apr. 1989.

degraders....The project will use only microorganisms that are indigenous to Prince William Sound. No genetically engineered microorganisms will be used in these studies.<sup>23</sup>

The two nutrient products to be tested were Inipol EAP 22 and Woodace Briquettes, which were bagged, time-release nutrient formulations containing isobutylidene diurea (IBDU). The briquette formulation was soon replaced by the granular fertilizer, Customblen, which could be applied by simple broadcast techniques. In commenting on the decision not to pursue studies involving the use of genetically engineered microorganisms, EPA project coordinator Hap Pritchard said:

If we were to introduce genetically engineered organisms, we'd have to get approval from the [EPA] Office of Toxic Substances, which is usually a 90-day process. Since we're dealing with a time constraint, we thought it was best to stick with the indigenous flora, which seemed best suited for the job anyway.<sup>24</sup>

Shortly after the release of EPA's bioremediation test plan by its Office of Research and Development, ORD proposed to Exxon a cooperative effort to conduct the bioremediation study under the Federal Technology Transfer Act of 1986.<sup>25</sup> Thus a union was created between EPA and Exxon to evaluate the use of different bioremediation techniques on the spill:

To ensure the independence of study results, EPA provided the technical expertise to carry out the bioremediation project, and was responsible for oversight and management of the study....In 1989, EPA's contribution to the Alaskan Oil Spill Bioremediation Project was approximately \$1.6 million and Exxon's share was about \$3 million.<sup>26</sup>

This arrangement, because it was viewed as a research and development effort, was made essentially outside the purview of the FOSC. In the view of scientific advisor Jacqui Michel (both Interagency Shoreline Cleanup Committee [ISCC] co-chair and Research and Development Committee chair during 1989), this was an opportunity that Exxon jumped on eagerly because of its good match to the company's enormous research capabilities and its technical problem-solving orientation. The EPA was likewise motivated in part at least by desires to expand a small bioremediation research and development effort that predated the spill.<sup>27</sup> Because the proposed testing was not viewed as part of operations, the ISCC, the NOAA research and development committee and other formally designated FOSC technical support elements had only peripheral involvement with the initial testing phase of the bioremediation program.<sup>28</sup>

23. H. Pritchard and C. Costa (EPA), "Implementation Plan for the Alaskan Oil Spill EPA Bioremediation Project: Phase II - Nutrient Addition Demonstration Project," 31 May 1989, no. C413, FOSC Exxon Valdez Archive.

24. Cutter Information Corp., "Bioremediation Project is Underway in Alaska," *Oil Spill Intelligence Report* 12 (22 June 1989): 2.

25. EPA Office of Research and Development, 5.

26. EPA Office of Research and Development, 6. The Technology Transfer Act (P.L. 99-502, 20 Oct. 1986, 15 U.S.C. 3710 [a]) permits EPA to accept cash and in-kind contributions related to the project from Exxon while retaining "exclusive control and supervision" of the cooperative research. Patents emerging from TTA agreements are available equally to either party and are also available to other parties through license or sublicense (EPA Office of Public Affairs, "EPA to Field Test Viability of Microorganisms in Cleaning up Alaska Oil Spill," *Environmental News*, 5 June 1989).

27. Dr. J. Michel (NOAA), interview by Dr. T. Leschine (FOSC staff), A. Van Emmerik (FOSC staff), and Lt. Comdr. R. Gaunt, Anchorage, 28 May 1992, no. F674, tape, FOSC Exxon Valdez Archive.

28. Michel, interview, 28 May 1992. EPA sought help from the NOAA R&D Committee in obtaining approval for widescale use of bioremediation (H. Pritchard and C. Costa [EPA], letter to J. Michel [NOAA], 28 June 1989, no. C872, FOSC Exxon Valdez Archive). The Homer ISCC toured candidate bioremediation sites on the Kenai Peninsula along with members of the Exxon/EPA Bioremediation Team on 22 July. It (and the Seward MAC and RMAC) subsequently recommended that the technique be applied in several locations (D. Chan [Homer ISCC], letter to Comdr. W. Griswold [ICP

The first of the joint EPA/Exxon bioremediation tests commenced on 8 June 1989 in Snug Harbor on southeastern Knight Island. A second and larger test was begun on 1 August at Passage Cove on the island's eastern side. The sampling effort implemented in the Snug Harbor tests included water and sediment sampling, "prior to and after application of the fertilizers. This included analysis of changes in oil composition and amount, increase in the number of oil degrading microorganisms, and nutrient levels on the shorelines and in the water."<sup>29</sup> Preliminary results from the Snug Harbor tests indicated that the number of oil degrading microorganisms had increased and that nutrient levels in the water column just offshore did not appear to be higher than normal.

More dramatically, however, was the striking disappearance, just a few weeks into the test, of oil from the surface of the treated shoreline at Snug Harbor. As described in a later EPA project summary:

Approximately two weeks after the oleophilic fertilizer was applied to the cobblestone beach plot, scientists observed visible reductions in the amount of oil on rock surfaces. This was particularly evident from the air, where the contrast with oiled areas surrounding the plot was dramatic. To the scientists who surveyed the test plot by helicopter, it looked as if a clean rectangle had been etched on the beach's surface. Close examination of this treated cobblestone plot verified that much of the oil on the rocks' surfaces was gone, although oil remained in the mixed gravel below the rocks.<sup>30</sup>

This unexpected and dramatic opening of what came to be known as the Snug Harbor "white window" had a galvanizing effect in transforming what had started as a research and development project into a process for seeking quick approval for the use of bioremediation as a main line cleanup tool. But the project had initially been experimental in nature, and its findings had also raised questions that would prove difficult to dismiss. The possibility raised in an earlier EPA report, that the test application of Inipol had demonstrated solvent qualities rather than, or in addition to, enhanced biodegradation, ultimately became one of the larger issues affecting ADEC's willingness to approve unconditionally the use of bioremediation.<sup>31</sup>

Despite these reservations, EPA felt that circumstances warranted moving forward with operationalizing the bioremediation program. Eric Bretthauer, acting assistant administrator for research and development at EPA, noted in a communication with Exxon officials:

As you are aware, all data to make a definitive recommendation on the efficacy of bioremediation are not available at this time. However, given the data presently

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Homer commander], 24 July 1989, no. C2606, FOSC Exxon Valdez Archive). The Exxon/EPA Bioremediation Team reviewed plans for full scale application with the Prince William Sound ISCC on 24 July, and Exxon requested approval for widescale use from them and the RRT on 28 July (Exxon, "Bioremediation Status" [internal memorandum from 27 July 1989, forwarded to Vice Adm. C. Robbins by O. Harrison, 29 July 1989], no. C1415, FOSC Exxon Valdez Archive).

29. EPA, "Alaskan Oil Spill Bioremediation Project: Fact Sheet," 6 July 1989, no. C845, FOSC Exxon Valdez Archive.

30. EPA Office of Research and Development, 8.

31. An early EPA fact sheet on the bioremediation project had noted that:

This phenomenon [the disappearance of oil from rock surfaces] may be physical removal of the oil rather than biodegradation....All of these results are very preliminary....Because of this, the effect of nutrient addition on the enhancement of biodegradation cannot be clearly determined at this time (EPA, "Alaskan Oil Spill Bioremediation Project: Fact Sheet").

available, the significant potential positive benefits, the absence of adverse ecological effects, and the limited time remaining in the summer season in Alaska, EPA would support an Exxon proposal for nutrient addition on oil contaminated shorelines.<sup>32</sup>

The EPA region ten administrator, Robie Russell, concurred with ORD's recommendation.<sup>33</sup>

Armed with this EPA support, Exxon proposed, on 28 July 1989, that bioremediation be approved for widescale application as a spill response tool. The proposal requested that eight beaches on Green and Seal islands be immediately approved for bioremediation application.<sup>34</sup> The RRT quickly granted Exxon conditional approval to apply Inipol on the eight sites.<sup>35</sup> The ISCC soon added its concurrence to the RRT's decision on the eight sites, but deferred on the question of the area-wide approval Exxon had sought.<sup>36</sup> On 1 August, however, the ISCC recommended to the FOSC that area-wide use of bioremediation be approved, subject to a number of guidelines.<sup>37</sup> The RRT concurred, and Admiral Robbins granted approval the same day.<sup>38</sup> The guidelines provided that:

Exxon will provide to the ISCC or MAC (for areas outside Prince William Sound) a weekly notification of areas scheduled for bioremediation treatment. The ISCC will review these areas and make any additional, site-specific recommendations necessary for protection of environmental and cultural resources.<sup>39</sup>

The ISCC developed application guidelines for bioremediation (table 10.1). These carried over into 1990 and subsequent years of the cleanup essentially unchanged.

In adopting the ISCC's recommendation, Admiral Robbins imposed a number of other expectations about how, and under what circumstances, bioremediation would be used. The primary focus was to be on "sites that have been physically treated or have light-to-moderate oiling."<sup>40</sup> The use of bioremediation on shorelines adjacent to poorly flushed bays was to be accompanied by water quality sampling to guard against nutrient overloading, and special guidelines were to be adhered to when bioremediation was used in environmentally or archaeologically sensitive areas. Both Alaska Department of Fish and Game (ADF&G) and the Resource Assessment Team were to be notified forty-eight hours prior to any application in the vicinity of anadromous streams, and use was limited to areas outside buffer zones at least twenty yards wide (or in accordance with additional setbacks that might be imposed by ADF&G). Archaeological constraints were typically dealt with by requiring the presence of an archaeological monitor during field operations.<sup>41</sup>

32. E. W. Bretthauer (EPA), letter to K. T. Koonce (Exxon), 26 July 1989, no. C1141, FOSC Exxon Valdez Archive. It is worth noting that this EPA support for operational use of Inipol, on the basis of incomplete data, was offered at precisely the same time in which the agency was placing stringent testing requirements on the solvent-type shoreline cleaner Corexit 9580M2, which was soon to be tested on Smith Island.

33. R. G. Russell (EPA), letter to Vice Adm. C. Robbins, 2 Aug. 1989, no. C1435, FOSC Exxon Valdez Archive.

34. Exxon, "Exxon Proposal for Broad Scale Application of Fertilizer to the Beaches to Enhance Biodegradation of the Oil," 28 July 1989, no. C1996, FOSC Exxon Valdez Archive.

35. Capt. A. C. Alejandro, letter to R. L. Mastracchio (Exxon), 29 July 1989, no. C1293, FOSC Exxon Valdez Archive.

36. Capt. A. C. Alejandro, letter to R. L. Mastracchio (Exxon), 31 July 1989, no. C1332, FOSC Exxon Valdez Archive.

37. ISCC Valdez, memorandum to FOSC, 1 Aug. 1989, no. C1321, FOSC Exxon Valdez Archive.

38. Vice Adm. C. Robbins, letter to O. Harrison (Exxon), 1 Aug. 1989, no. C1342, FOSC Exxon Valdez Archive.

39. ISCC Valdez, memorandum to FOSC, 1 Aug. 1989.

40. *Ibid.*, attachment 1.

41. *Ibid.*

TABLE 10.1

## Bioremediation Application Guidelines

Type of Shoreline	Surface Oil	Subsurface Oil	Type of Fertilizer
Sand	Yes	Yes	Inipol and Granular
Gravel	Yes	No	Inipol
Cobble	No	Yes	Granular Only
Rock Outcrop			None
Large Boulder			None
Cliff			None

Source: ISCC Valdez, memorandum to FOSC, Valdez, 1 Aug. 1989, no. C1321, FOSC Exxon Valdez Archive.

In addressing the concerns about the efficacy of bioremediation noted earlier, Admiral Robbins also informed Exxon's leadership of his intentions:

To evaluate the effectiveness of the bioremediation at each site during the remainder of the season. I urge that the necessary sampling and tests be conducted so that we will know BR [bioremediation] is working. Next spring it is my intention to again evaluate all shoreline segments. If a BR [bioremediation] treated segment appears to be unsatisfactory, I will insist that it be retreated with an appropriate method. If you intend to resist further work because BR [bioremediation] activity is progressing, I will expect you to produce data to support your position, so I can determine if further treatment may not be justified.<sup>42</sup>

The second day of August thus marked the beginning of the ad hoc decision process that would be applied, on a weekly basis, to identify sites for bioremediation. Sites nominated by Exxon would be considered individually by the ISCC and then passed on to the FOSC for final approval, often with additional site-specific recommendations. In the ISCC's first meeting some seventy-three shoreline segments, totaling approximately thirty miles in length, were recommended for treatment.<sup>43</sup> This approval process continued to function through the remainder of the 1989 cleanup season.

For the most part, major conflict over the use of bioremediation was avoided during the 1989 cleanup season. Land managers in the Snug Harbor area (U.S. Forest Service) gave their assent to the tests proposed for their lands,<sup>44</sup> and while native groups expressed concerns for cultural resources in the area of the proposed tests, they stopped short of outright opposition.<sup>45</sup> But periodic disputes over health and safety issues, and alleged misapplication of Inipol, and concerns with effects on wildlife, did occasionally surface.

The EPA expressed concern over possible misuse or misapplication of bioremediants in a 23 August letter to the FOSC:

42. Robbins, letter to Harrison, 1 Aug. 1989.

43. S. Christopherson (ISCC), memorandum to Vice Adm. C. Robbins, 2 Aug. 1989, no. C2327, FOSC Exxon Valdez Archive.

44. J. Knorr (USDA, Forest Service), memorandum to FOSC, 14 July 1989, no. C974, FOSC Exxon Valdez Archive.

45. L. Johnson (Chugach Alaska Corp.), memorandum to FOSC, 14 July 1989, no. C976, FOSC Exxon Valdez Archive.

A number of Exxon contract employees have recently been tested for adverse reactions to the fertilizers currently being used in the Bioremediation Program....Furthermore, the EPA understands from your operations summary report (August 22) that both the U.S. Fish and Wildlife Service and the National Park Service have raised concerns over the ingestion of the granular fertilizer by migrating birds.<sup>46</sup>

The letter promised that the agency would "make every attempt" to help resolve such problems.<sup>47</sup>

Operational controversies reached their peak in late August and early September when ADEC issued to Exxon a notice of violation (NOV) for two cases in which the state claimed Inipol had been misapplied. The first occurred on Evans Island when Inipol was allegedly applied above the oiled zone in the upper intertidal zone. The second occurred in Herring Bay on Knight Island, where Inipol was allegedly applied directly onto cliffs, subsequently washing into the water in the vicinity of an anadromous fish stream. According to ADEC, both of these applications violated the fertilizer application criteria that had been approved by the RRT and posed an unacceptable risk to the nearby biota and environment.<sup>48</sup>

After viewing a video prepared by ADEC and purporting to document this misuse of Inipol in the field, EPA officials concluded that:

If the product being applied was indeed Inipol, that...the operational difficulties, no doubt are the result of inadequate training and insufficient supervision of applicators. It is EPA's recommendation that Exxon take immediate corrective actions to ensure that there are no future instances of Inipol misuse. EPA continues to support the use of Inipol...for the purpose of bioremediation, on appropriate beach surfaces, in appropriate amounts, and only in a manner that adequately protects wildlife and natural resources.<sup>49</sup>

Admiral Robbins felt, after reviewing the incidents, that changes in procedures and oversight made by Exxon and the federal and state agencies were sufficient to prevent a recurrence.<sup>50</sup> In responding to ADEC's issuance of the NOV, Exxon expressed hopes, however, that future such incidents could be resolved *prior* to legal actions by the state. Exxon general manager, Otto Harrison, felt that an earlier informal agreement to advise promptly on such matters, so that corrective action could be taken as warranted, had been violated.

46. R. A. Valentinetti (EPA), letter to Rear Adm. D. E. Ciancaglini, 23 Aug. 1989, no. C1810, FOSC Exxon Valdez Archive. Ciancaglini was serving in temporary relief of Robbins at this point.

47. L. Antrim and J. Word, "Acute Toxicity of Inipol and Weathered Petroleum to Salmon, Herring, and Mussel Larvae" (draft report, 1 Nov. 1989), no. W1639, FOSC Exxon Valdez Archive. The toxicity-related questions being pursued in the joint EPA/Exxon study program at this time were dominated by questions of marine environmental toxicity, in accordance with the agreed upon protocols for decisions on the use of bioremediation. But concerns for affects on other wildlife or humans who might come into contact with Inipol on treated shorelines were also raised.

48. J. Bauer (ADEC), letter to O. Harrison (Exxon), 2 Sept. 1989, no. C2129, FOSC Exxon Valdez Archive. The Inipol application criteria stated that:

The Inipol should not be sprayed directly on the surface of tidal, pooled or running water or on living plants....Apply nutrients far enough away from catalogued streams and their flood plains to prevent introduction of these materials into them....In poorly flushed embayments or near streams of particular concern, additional setbacks may be established by ADF&G (ISCC Valdez, memorandum to FOSC, 1 Aug. 1989).

49. B. Glasser (EPA), letter to Vice Adm. C. Robbins, 2 Sept. 1989, no. C2186, FOSC Exxon Valdez Archive.

50. USCG FOSC, memorandum to state OSC, 5 Sept. 1989, no. C2284, FOSC Exxon Valdez Archive.



I am quite disappointed that ADEC chose to disregard their earlier agreement before issuing the...NOV (Notice of Violation), especially since this subject had not come up in our weekly meetings which are intended to address and eliminate potential problems.<sup>51</sup>

The 1989 cleanup season ended shortly after this issue of alleged Inipol misapplication was settled. As the year ended, the first detailed assessment of the 1989 studies undertaken by the joint EPA/Exxon Bioremediation Project emerged. The study, while circumspect in its conclusions ("A thorough statistical trend analysis is required before the...conclusions can be fully verified"),<sup>52</sup> was nevertheless quite positive about the likely efficacy and environmental safety of bioremediation. This juxtaposition of positive assessments of bioremediation's potential as a cleanup tool, with difficult-to-dismiss residual uncertainty about just what the effects of extensive reliance on bioremediation application were likely to be, was to prove telling in 1990, when deep divisions developed between the state, the FOSC, and Exxon on what role bioremediation should play.

### BIOREMEDIATION IN 1990

The introduction of bioremediation as a cleanup technology in 1989 had proceeded relatively smoothly through the process of testing, approval, and ultimately, adoption as a significant addition to the arsenal of cleanup tools. But the 1990 cleanup effort did not prove to be a simple continuance of the direction established in 1989, with increasing doubt being expressed by the state of Alaska regarding the way bioremediation was being used on shorelines affected by the spill. While EPA remained supportive of the technology, and Exxon and the FOSC remained committed to its use, the state backpedaled, declaring that the conditional approval it had granted in 1989 would not carry over into 1990, and that a renewed testing and approval process would be necessary.

In an attempt to reduce the uncertainties in the scientific studies of bioremediation, that were conducted during 1989, the joint EPA/Exxon Bioremediation Program undertook an ambitious 1989–90 winter research program. This program focused primarily on the questions of efficacy and toxicity of Inipol, emphasizing in particular a renewed attempt to determine whether the initial effectiveness of Inipol application was due to solvent action or to an increase in biodegradation. Efforts to optimize application methods and to develop analytical procedures by which the amount of oil degradation taking place could be accurately measured were also emphasized.<sup>53</sup> The results of these additional studies were again reported in a highly favorable light by EPA<sup>54</sup> (though some of the most pressing scientific questions in fact appear to be only nearing final resolution in 1992).<sup>55</sup>

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51. O. Harrison (Exxon), letter to J. Bauer (ADEC), 5 Sept. 1989, no. C2288, FOSC Exxon Valdez Archive.

52. H. Pritchard et al., "Oil Spill Bioremediation Project: Interim Final Report," 8 Dec. 1989, no. W269, FOSC Exxon Valdez Archive, 3.

53. EPA Office of Research and Development, 14–15.

54. *Ibid.*, 14. On the question of whether Inipol was having a solvent effect, for example, the general distribution document prepared by the EPA states, "Laboratory studies during the winter, however, confirmed that the oleophilic fertilizer enhanced the extent and rate of oil degradation through the addition of inorganic nutrients."

55. EPA and Exxon, "EPA/Exxon Bioremediation Review" (distributed by Exxon officials at the 22 Jan. 1992 Spring—Summer Planning Meeting held in Juneau under USCG sponsorship, 17 Jan. 1992), no. F806, FOSC Exxon Valdez Archive.

Based upon visual observations of our demonstration plots and analyses of the field and laboratory data,...we conclude that the application of nitrogen and phosphorus fertilizers enhances biodegradation of oil from the contaminated beaches. The absence of adverse ecological effects observed from fertilizer application further supports bioremediation as a feasible clean-up procedure.<sup>56</sup>

The EPA reasserted its lead role in the bioremediation program's research and development effort when it announced, in February of 1990, that it was "seeking organizations or companies that could offer commercial methods of enhancing the biodegradation of crude oil residues in Alaska."<sup>57</sup> Proposals were to be submitted to the National Environmental Technology Applications Corporation (NETAC), a research and development organization established through a cooperative venture between EPA and the University of Pittsburgh.<sup>58</sup> The FOSC asked that the Coast Guard research and development center, located in Groton, Connecticut, serve as a liaison and coordination point for the testing and engineering efforts that would take place through the coming cleanup season.<sup>59</sup>

The Shoreline Cleanup Technology Workshop, held in Newport Beach, California in February of 1990 and involving participants from the Coast Guard, EPA, ADEC, NOAA, and Exxon, produced a three page "consensus document" that seemed to set the stage for greater reliance on bioremediation in 1990 than there had been in 1989<sup>60</sup> Among points made in the document were that:

- Accelerated biodegradation through fertilizer application is an important option in the consideration of methods to further reduce oil residues in Alaska;
- Fertilizer application shows good prospects for biodegradation at depth;
- Active cleanup techniques may be considered to enhance natural processes in some areas, depending on site-specific cleanup objectives and tradeoffs; and
- Non-intrusive, low-impact techniques (manual pickup, snare booms, tar-mat breakup or removal, and bioremediation) are the preferred methods when active cleanup is deemed necessary to accelerate natural cleansing.

#### APPROVAL OF BIOREMEDIATION IN 1990

Despite the seemingly favorable consensus view that emerged from the February workshop in Newport Beach, whether bioremediation should be approved for area-wide application in 1990 became one of the most contentious issues of that year. Conditional approval, the case in 1989, made continued use of bioremediation

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This document summarizes the weaknesses in past studies conducted under the joint EPA/Exxon program (and presents new results which seemingly lay many of the previously unresolved points to rest).

56. E. W. Bretthauer (EPA), letter to Rear Adm. D. E. Ciancaglini, 15 Mar. 1990, no. W496, FOSC Exxon Valdez Archive.

57. EPA Office of Research and Development, 19.

58. J. Kitagawa and A. Viteri (ADEC), "Report on Oil Spill Bioremediation Enhancement Technology" (draft report prepared by ADEC, 1 June 1990), no. W1945, FOSC Exxon Valdez Archive. Thirty-nine proposals were evaluated by NETAC, and 10 commercial products were ultimately selected for lab testing.

59. USCG Research and Development Center, "Status of Short Term T&E Efforts for Exxon Valdez Cleanup," 6 Apr. 1990, no. W637, FOSC Exxon Valdez Archive.

60. R. Mastracchio (Exxon), attachment to memorandum to S. Provant (ADEC), 16 Feb. 1990, no. W426, FOSC Exxon Valdez Archive.

contingent upon the results obtained in the joint EPA/Exxon studies begun in 1989. Because the system of site-by-site approvals developed under the aegis of the ISCC had worked relatively smoothly in 1989, there was a strong desire to avoid a situation in which *fewer* treatment techniques would be available, even before the 1990 season had begun.

Early in February, at the request of the FOSC, Alaska RRT co-chair, Captain Bodron, polled RRT members on whether area-wide use of bioremediation in the 1990 cleanup season (which was set to begin on 1 May) would require reapproval.<sup>61</sup> The EPA supported wide area application, noting that "our general belief is that if the nutrients are applied properly, there should be no adverse effects seen even in sheltered bays and waters." The agency also believed that the NCP did require formal reapproval by both EPA and the state of Alaska before bioremediation application could continue.<sup>62</sup>

The Alaska Department of Environmental Conservation agreed on the need for reapproval, adding to the rationale reasons of its own. It responded through Steve Provant, state OSC, that the use of bioremediation would need reapproval in 1990 because the state had granted only "conditional interim" approval, and not area-wide approval, in 1989. Moreover, the Alaska OSC expressed the view that:

Last year's conditional interim approval placed the burden on Exxon for producing data to support that bioremediation is still progressing on bioremediated shorelines.... To date, no data has been presented to show that the application of Inipol or Customblen significantly enhanced the bioremediation process over naturally occurring [biodegradation].<sup>63</sup>

In response to a request from Captain Bodron, Alex Viteri of ADEC's Oil Spill Response Center provided additional insights into the state's position.<sup>64</sup>

EPA has changed some of their positions regarding bioremediation, such as: stating that it is okay to use it in sheltered bays and waters, and that it will be useful in the treatment of subsurface oil. They (ADEC) will not accept these "new" positions on faith alone, and state that they must see some written documentation which proves to their satisfaction that these new positions are reasonable.<sup>65</sup>

Mr. Viteri stated further that, even if such information were provided, it would enable the state to approve only the initiation of testing, not widescale use.

Captain Bodron of the Alaska RRT concluded in light of this response from the state that:

Bioremediation may not be used unless, in the judgment of the OSC, the use of the product is necessary to prevent or substantially reduce a hazard to human life. The RRT will not revisit this issue. If ADEC changes its mind or receives the documentation it desires and gives approval then the bioremediation technique can be used as far as the RRT is concerned.<sup>66</sup>

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61. Capt. D. E. Bodron, letter to Alaska RRT members, 9 Feb. 1990, no. W442, FOSC Exxon Valdez Archive.

62. Capt. D. E. Bodron, "Summary of ARRT Agency Comments Regarding Approval of Wide Area Application of Bioremediation Treatment" (memorandum to FOSC, 20 Mar. 1990), no. W527, FOSC Exxon Valdez Archive.

63. S. Provant (ADEC), letter to Capt. D. E. Bodron, 15 Mar. 1990, no. W689, FOSC Exxon Valdez Archive.

64. Capt. D. E. Bodron, memorandum to FOSC, 20 Mar. 1990, no. W527, FOSC Exxon Valdez Archive.

65. *Ibid.*

66. *Ibid.*

Captain Bodron recommended that the FOSC arrange a face-to-face meeting of the relevant state and federal agencies to resolve ADEC's concerns.

The importance Admiral Ciancaglini attached to having bioremediation available for use in 1990 can be seen in a letter to the state OSC, Steve Provant, imploring the state to "resolve its issues with the use of bioremediation as soon as possible."<sup>67</sup>

I consider bioremediation to be one of the most important of those (the available) tools. The EPA, along with other agencies, has stated that they do not object to its use. Only the State of Alaska objects! [exclamation added]<sup>68</sup>

Following Captain Bodron's suggestion, the Coast Guard arranged for a 30 March meeting in Anchorage to discuss the matter further. Some thirty state, federal, and Exxon representatives attended. The point of view that the Coast Guard (whose principal representative was Captain David Zawadzki) brought to the meeting was that shoreline cleanup decisions should emphasize a "decision tree" approach in which land manager and resource agency inputs were explicitly included in site-by-site decisions on the type of treatment to employ.

At the meeting ADEC Commissioner Dennis Kelso indicated that ADEC's position was *not* one of outright opposition to bioremediation, and that the agency's objective was to resolve the issue before the scheduled 1 May onset of the 1990 field program.<sup>69</sup> The state feared that its assent to area-wide use at this early stage would result in "uncontrolled" widespread application of bioremediation. The question was framed by Mr. Kelso and other state officials present as one of *how* bioremediation would be used, a question that they felt had not been adequately addressed. Exxon's chief representative at the meeting (Robert Mastracchio) responded that the emphasis would be on using bioremediation as an adjunct to other methods, and not as primary treatment on heavily oiled areas.

The meeting ended without a firm commitment from the state, but with a sense in the minds of at least some federal officials present that, once appropriate details of how bioremediation would be used in 1990 had been developed, the state might well support its renewed use.<sup>70</sup>

Of influence in the debate surrounding the approval and use of bioremediation were the concerns about its use expressed by some federal and state agencies, Native

67. Rear Adm. D. E. Ciancaglini, letter to S. Provant (ADEC), 22 Mar. 1990, no. W507, FOSC Exxon Valdez Archive.

68. *Ibid.*

69. USCG FOSC, "Bioremediation Meeting Summary," 30 Mar. 1990, no. W938, FOSC Exxon Valdez Archive.

70. *Ibid.* Comments of NOAA representative Burl Wescott. NOAA SSCs were actively involved in the February Newport Beach meeting and in developing the decision tree approach discussed at the 30 March meeting. The NOAA position, based on its earlier response to the Alaska RRT co-chair, was that reapproval would not be necessary provided land trustees/owners and cognizant resource agency personnel gave specific approval on a site-by-site basis. At the same time, NOAA felt that the question of whether bioremediation was truly enhancing the "high rate of natural degradation" had to be addressed, and that a scientifically valid method for quantifying degradation rates still needed to be found. Moreover, NOAA expressed the view that it was still necessary to demonstrate "the 'detergent effect' or lack thereof of lauryl phosphate [in Inipol], to make sure that the contaminated rocks are not being shampooed at initial application" (Capt. D. E. Bodron, memorandum to FOSC, 20 Mar. 1990, no. W527, FOSC Exxon Valdez Archive). NOAA principal representative David Kennedy urged restraint in the use of any "intrusive" cleanup at the 30 March meeting, and expressed confidence that continued monitoring would answer the remaining questions about bioremediation.

corporations, environmental and citizens groups, and some of the municipalities affected by the spill.<sup>71</sup> While state officials felt these concerns justified their cautious approach, the Coast Guard leadership saw the considerable potential effectiveness of bioremediation as far too great to exclude it from the "tool box" even before the 1990 season had gotten underway.

This developing impasse was resolved through the generation of a more comprehensive and more broadly based monitoring program than had existed in 1989, one that included ADEC as well as Exxon and EPA. Exxon's Alaska Operations Office released in mid-April a proposal for a monitoring program that would include ADEC (represented by Jon Lindstrom) as well as EPA (represented by Hap Pritchard).<sup>72</sup> That such an approach could work to resolve the impasse is suggested by an internal memo (subsequently released) prepared by ADEC's Oil Spill Response Center.

At this time there is no conclusive field evidence that bioremediation is a useful means of removing oil. Studies performed to date by Exxon and the U.S. EPA remain inconclusive....ADEC, in cooperation with Exxon and EPA would like to perform a series of simple, quick studies to answer the questions.<sup>73</sup>

On 1 May 1990, ADEC again granted conditional approval for bioremediation. The conditions of approval included:

Strict adherence to the Technical Advisory Group process, adherence to 1990 operational procedures, and close scientific monitoring. We are confident in this decision because it is based on an open public review process and an independent scientific review of the most current available data.<sup>74</sup>

The ADEC expected 1990 operational procedures to be developed and approved prior to application, and also expected to give its own approval to the comprehensive monitoring program before application could begin. Also included was the condition that if, after the first six weeks of monitoring, biodegradation had not been shown to have increased, the reapplication of bioremediation agents (to sites where they had previously been applied) would not be approved.<sup>75</sup>

The state also took an explicit policy position with respect to the potential toxicity associated with the bioremediation compounds that were being used in the shoreline treatment program.

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71. G. Evanoff (Chenega Corp.), letter to Comdr. G. A. Reiter, 4 May 1990, no. W1057; P. Norma (Port Graham Corp.), letter to FOSC, 9 May 1990, no. W1043; S. Libenson (Alaska Center for the Environment), letter to D. Kelso (ADEC), 18 Apr. 1990, no. W872; J. Selby (mayor, Kodiak Island Borough), letter to Rear Adm. D. E. Ciancaglini, 30 Apr. 1990, no. W1862; and D. Gilman (mayor, Kenai Peninsula Borough), letter to B. Wescott (NOAA), 1 May 1990, no. W1869, FOSC Exxon Valdez Archive. A group of "concerned citizens," not otherwise identified in documentation on file, organized a petition drive in the Anchorage area against the use of Inipol in the 1990 season ("Inipol Petition Alert," no. W688, FOSC Exxon Valdez Archive).

72. J. Wilkinson (Exxon), letter to R. R. Chianelli (Exxon), 16 Apr. 1990, no. W752, FOSC Exxon Valdez Archive.

73. ADEC, "ADEC Oil Spill Response Center Technical Services Staff Report," 17 Apr. 1990, no. W953, FOSC Exxon Valdez Archive.

74. R. Bayliss (ADEC), letter to Capt. D. E. Bodron, 1 May 1990, no. W794, FOSC Exxon Valdez Archive.

75. Ibid. The issue of reapplication was important because monitoring results were suggesting that the efficacy of the treatment method was improved if contaminated shorelines received more than one treatment (see e.g., ADEC, "Bioremediation Fact Sheet," 10 July 1990; or J. Clark et al., "Bioremediation Monitoring Sites Interim Summary," 2 July 1990).

A thorough review of the available data on bioremediation fertilizer confirms that it is toxic to intertidal organisms. This toxicity is localized...and appears to degrade completely within a matter of days....The state is willing to accept the short-term toxicity in return for the expected environmental gain resulting from the removal of crude oil from the shoreline.<sup>76</sup>

The result of this approval by the state was that the Technical Advisory Group (TAG) would be able to play in 1990 the role that the ISCC had played in 1989, recommending to the FOSC if bioremediation should be used on a case-by-case basis and in accordance with general guidelines on how bioremediants were to be utilized.

The "1990 Bioremediation Operational Guidelines,"<sup>77</sup> while generally similar to those applied in 1989, also incorporated modifications reflecting the changing conditions that weathering and other forces had created on oiled shorelines through the intervening winter. New procedures were developed for the use of bioremediation in conjunction with the removal of tarmats and in the treatment of oiled storm berms in the "supra-tidal" zone.<sup>78</sup> General restrictions on the use of bioremediation in poorly flushed embayments were eliminated (but not the possibility of restrictions in special cases) in light of monitoring program results. It was noted that, "Generally, low angle pebble/cobble beaches where surface and/or subsurface oiling exists represent the ideal shoreline for fertilizer application."<sup>79</sup>

#### BIOREMEDIATION TESTING AND MONITORING IN 1990

The 18 May 1990 prospectus for the joint ADEC, EPA, and Exxon monitoring program established that the program would comprise three types of test sites: low energy shorelines with both surface and subsurface oil, a moderate energy site with surface and subsurface oil, and a high energy beach with only subsurface oil. The study was to be jointly supervised by all three participants, and the program's goal was "to provide an evaluation of the benefits and risks associated with the application of fertilizers to oiled shoreline in Prince William Sound within about six weeks of its initiation."<sup>80</sup> Sites chosen for the first of these tests were all on Knight Island, on the subdivisions KN-135B, KN-211E, and KN-132B (figure 10.1).

The FOSC approved the first test application, for subdivision KN-135B in the Bay of Isles, on 18 May 1990.<sup>81</sup> But the seemingly harmonious accord on the bioremediation testing program was quickly marred by an incident affecting the bioremediation test

76. Ibid.

77. Exxon, "Bioremediation Monitoring Program," 18 May 1990, attachments 2 and 3, no. W1119, FOSC Exxon Valdez Archive.

78. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 22 June 1990, no. W1361, FOSC Exxon Valdez Archive. These procedures were refined subsequent to release of the guidelines, upon request of Exxon and in consultation with the state.

79. Exxon, "Bioremediation Monitoring Program," 18 May 1990, attachment 3.

80. Ibid., attachment 1.

81. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 18 May 1990, no. W1324, FOSC Exxon Valdez Archive.

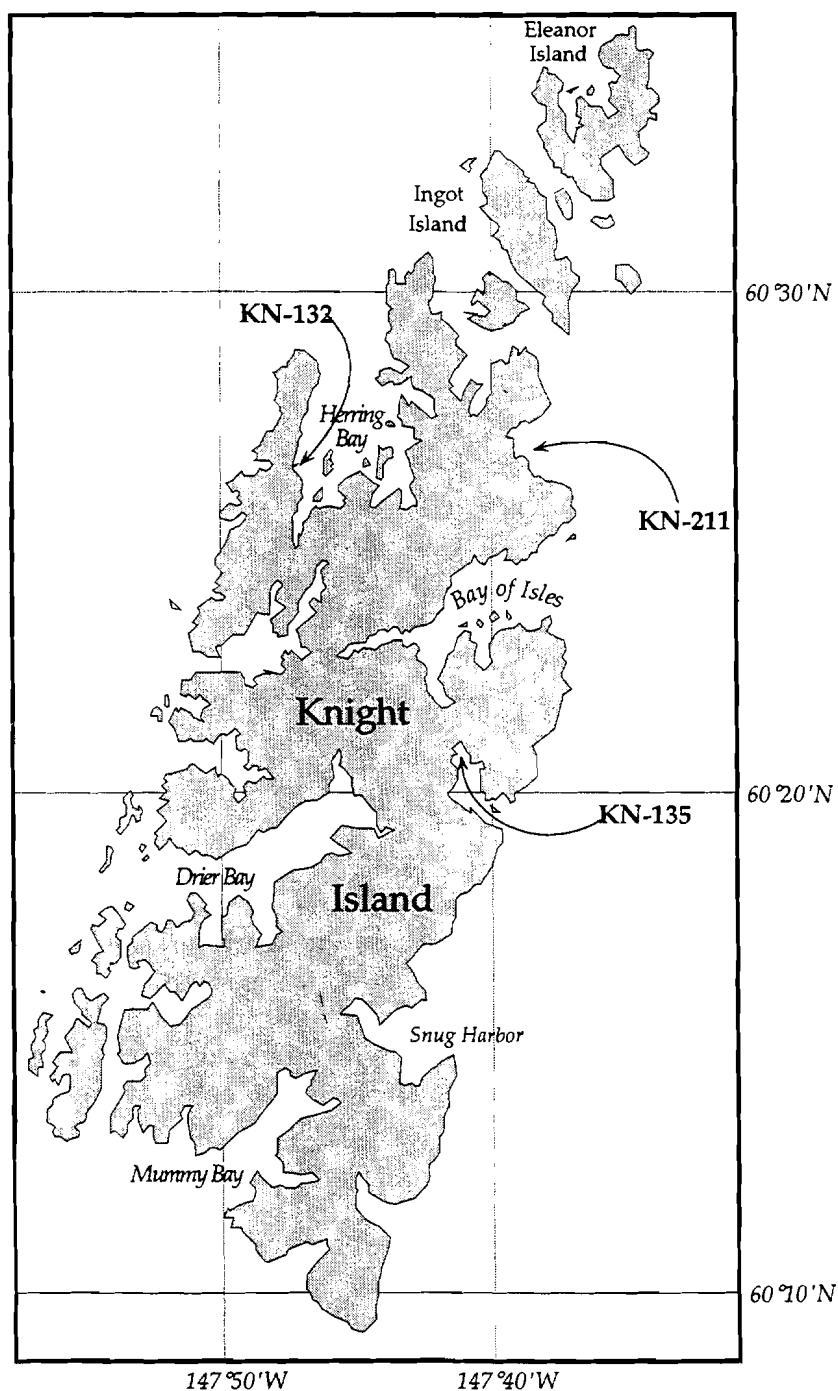


Figure 10.1. Approximate locations of shoreline segments KN-135, KN-211, and KN-132.

now set to take place on KN-135B. Before the test could begin, ADEC's John Bauer informed the Coast Guard's field representative at the site that:

The state of Alaska disagrees with the Coast Guard's approval of Exxon to demobilize from this subdivision. Initial manual treatment has not been completed on the segment and the state requests additional manual pickup of oiled sediments and debris prior to fertilizer application. The state believes that the additional manual work will increase the chances

of successful bioremediation on this site. This additional treatment is not intended to impact or jeopardize the bioremediation test site.<sup>82</sup>

The issue raised, the extent to which sites had to be cleaned before bioremediation could be applied, was to become a major (though temporary) sticking point of the 1990 bioremediation program. Field commander Kenneth Keane took issue with Mr. Bauer's assessment,<sup>83</sup> and the matter, which could presumably have been resolved at the field level where it started, escalated as ADEC officials subsequently brought it to the attention of the news media and to the general public through the forum provided by the Operations Steering Committee meeting held the following week. In response, Rear Admiral Ciancaglini issued a very strong statement on the incident:

I am the final arbiter in all cases of work approval and quality...no one else! I must make decisions on the best information available to me. Frankly, the state ADEC representatives who have created this controversy are not scientists and, in this case, are wrong....I consider the political gamesmanship that I am seeing to be detrimental to the cleanup process. It is my firm belief that the resolution of differences is best accomplished by the decision makers talking face to face...not through the media.<sup>84</sup>

The test, though delayed by this incident, went forward on 21 May. Treatment of the additional sites selected for the first test was conducted on 30 May and 2 June, and a detailed thirty-two day program of sediment and water sampling was initiated to monitor the tests.<sup>85</sup> To keep interested parties informed on the progress of these tests, the EPA/Exxon Bioremediation Program was soon generating weekly status reports that were circulated to the FOSC, ADEC, EPA, NOAA, and Exxon.

By early July, these status reports were indicating that the success of the applications was quite high. They recommended reapplication to all test sites.<sup>86</sup> This recommendation was supported by findings that nutrient concentrations in interstitial waters in treated plots appeared to return to normal by the end of the sampling period<sup>87</sup> (meaning that the elevated nutrient levels thought necessary to spur accelerated biodegradation were no longer present). This led Exxon to seek approval of second applications of bioremediation to the test shorelines that had been previously treated.

It has now been 32 days since the last of these segments was initially treated, and we believe it is in the mutual interest of all parties to study the effect of a second treatment.<sup>88</sup>

The state's position, outlined in a 1 May conditional approval letter, was that a decision to permit *general* reapplication would have to await results of the monitoring program.

82. J. Bauer (ADEC), letter to Lt. Comdr. K. Keane, 19 May 1990, no. W1152, FOSC Exxon Valdez Archive.

83. Lt. Comdr. K. Keane, letter to J. Bauer (ADEC), 19 May 1990, no. W1153, FOSC Exxon Valdez Archive. The matter of how much manual or mechanical treatment was required before bioremediation could be applied was at this time the focus of discussion in the operational bioremediation program which was already underway at this time.

84. Rear Adm. D. E. Ciancaglini, "Knight Island (KN 135B) Controversy," 24 May 1990, no. W1058, FOSC Exxon Valdez Archive.

85. J. Whitney (NOAA), memorandum to NOAA SSC (status report on bioremediation monitoring program, 4 June 1990), no. W1187, FOSC Exxon Valdez Archive.

86. ADEC, EPA, and Exxon, "Bioremediation Monitoring Program" (weekly report for 25 June to 1 July 1990), no. W1190, FOSC Exxon Valdez Archive.

87. Prince, Clark, and Lindstrom, 10 July 1990. The report also declared that, "It is already clear that bioremediation is a safe and effective tool in removing oil from the shorelines of Prince William Sound and the Gulf of Alaska of spilled crude oil."

88. R. L. Mastracchio (Exxon), letter to Rear Adm. D.E. Ciancaglini, 5 July 1990, no. W1190, FOSC Exxon Valdez Archive.



The state had no objection, however, to reapplication as part of the tests themselves, and the additional test fertilizations on Knight Island were permitted to go forward.<sup>89</sup>

#### BIOREMEDIATION OPERATIONS IN 1990

Testing and day-to-day bioremediation operations, subject to the conditions outlined in early May, ran concurrently during 1990. By late June, 134 sites had been bioremediated, even as testing continued on Knight Island.<sup>90</sup> By mid-July, 245 sites had been treated.<sup>91</sup> Among issues that would emerge in the course of day-to-day cleanup operations in 1990 were the conditions under which reapplication of bioremediants would be permitted, the degree of cleanup that would be required prior to application of bioremediation, and the use of bioremediation in conjunction with other treatment of tarmats and of contaminated supratidal storm berms. The continued reluctance of many land managers to permit use of bioremediation would have to be accommodated, and the question of whether a strict numeric standard could be applied in determining when sites were ready to receive a "final" treatment with bioremediation, would prove particularly divisive.

Some of these questions were anticipated in the operational guidelines that had been issued in May. For example, the guidelines anticipated that, "Some locations requiring fertilizer application may be treated more than once throughout the summer, should early monitoring program results regarding multiple applications prove favorable." In addition, procedures were described for using bioremediation in "storm berm relocations," a treatment technique that was to become more prevalent in 1990 and 1991:

In the special cases where storm berm substrate is targeted for fertilizer application, sediments will be manually or mechanically relocated to the upper to midintertidal zone(s) before treatment, as specified by the FOSC approved work order, so that proper flushing may occur.<sup>92</sup>

One shoreline oiling condition that was found to be widespread in 1990 was the occurrence of asphalt pavements (also known as tarmats), often underlain with pooled oil or heavy oily residue. Once tarmats were removed, the oil underneath was freed, either to form a new tarmat or to remobilize in the environment. By mid-May questions were coming in from the field about how much of the newly exposed material should be removed, and whether areas under the mats could be treated with Customblen along with manual or mechanical tilling to hasten degradation of the residual.<sup>93</sup> In addition, the widespread occurrence of oiled storm berms located above the normal tide line (and created by storms during the previous winter) was leading to questions about whether Customblen should be permitted in these areas as well

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89. R. Bayliss (ADEC), letter to Rear Adm. D. E. Ciancaglini, 10 July 1990, no. W1714, FOSC Exxon Valdez Archive.

90. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 29 June 1990, no. W1715, FOSC Exxon Valdez Archive.

91. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 19 July 1990, no. W1321, FOSC Exxon Valdez Archive.

92. Exxon, "Bioremediation Monitoring Program," 18 May 1990, attachment 3.

93. USCG admin., teletype message to FOSC, 15 May 1990, no. W1264; and P. Rubenstein (NOAA), facsimile to B. Wescott (NOAA), 23 May 1990, no. W1118, FOSC Exxon Valdez Archive.

(though the use of bioremediation in the supra-tidal zone had generally been ruled out by the operational guidelines).

In mid-June, Exxon proposed formal changes in the operational guidelines to permit closely spaced doses of Customblen in conjunction with the removal of tarmats, and to permit the use of Customblen on supratidal storm berms.<sup>94</sup> The FOSC approved the new treatment policy for tarmats, but demurred on making a general policy on the use of Customblen above the normal tidal zone in deference to the concerns of land managers. He proposed instead that the matter be dealt with on a case-by-case basis through work order amendments.<sup>95</sup>

Subsequent correspondence with Otto Harrison revealed a strong desire on Exxon's part to automate as much as possible the decision process for using bioremediation. The FOSC's position remained the same, however—the decision making process established through TAG had to be utilized, and proposals to use bioremediation had to be dealt with in a manner that ensured land managers input.<sup>96</sup> A similar difference in viewpoints emerged on the question of whether it was appropriate to hold, in light of the new role for bioremediation in tarmat removal, a special field meeting of agency and land manager representatives to discuss how to distinguish newly exposed pooled oil (for which bioremediation was prohibited) from oily residue (to which bioremediation could be applied under the newly developed tarmat removal protocols). Though Mr. Harrison objected to holding such a meeting after operational guidelines had already been set, Admiral Ciancaglini expressed strong support for it. He saw such meetings as important fora for developing a common set of beliefs on the most appropriate use of this increasingly important tool for shoreline cleanup operations.<sup>97</sup>

Continuing land manager concerns about bioremediation are reflected in policies on its use. The basic policy was to honor the desires of the land manager with respect to the use of bioremediation on shorelines under his or her jurisdiction, but to avoid *carte blanche* judgments in favor of decisions made on a case-by-case basis.<sup>98</sup> The FOSC's strategy was to offer for specific consideration by the appropriate land manager any segments where the TAG process had resulted in a recommendation to use bioremediation with which the FOSC concurred, but where the local land manager representative was on record as being in opposition.

The National Park Service, manager of large areas affected by the spill in the Seward and western Alaska regions, requested in April that Inipol not be used on park shorelines pending the results of studies that would prove its effectiveness on the

94. H. Jahns (Exxon), letter to Rear Adm. D. E. Ciancaglini, 11 June 1990, no. W1360, FOSC Exxon Valdez Archive.

95. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 22 June 1990, no. W1361, FOSC Exxon Valdez Archive.

96. A. D. Carpenter (Exxon), letter to Rear Adm. D. E. Ciancaglini, 21 June 1990, no. W1661; and Rear Adm. D. E. Ciancaglini, letter to O. Harrison, 7 July 1990, no. W1727, FOSC Exxon Valdez Archive.

97. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 29 June 1990, no. W1715; and Rear Adm. D. E. Ciancaglini, letter to O. Harrison, 9 July 1990, no. W1716, FOSC Exxon Valdez Archive.

98. Rear Adm. D. E. Ciancaglini, letter to W. Copeland (Alaska DNR), 6 May 1990; and Ciancaglini letter to P. Gates (DOI), 5 May 1990, no. W1018, FOSC Exxon Valdez Archive. This position was spelled out in numerous letters to land managers from Rear Adm. D. E. Ciancaglini.

highly weathered oil then being found on Gulf of Alaska shorelines, and pending additional toxicity studies.<sup>99</sup>

The NPS suggests that, based on available EPA field data, the efficacy of Inipol on remaining oil may not outweigh the potential toxicity to surviving or recovering infaunal communities.<sup>100</sup>

Native corporations, feeling ill-equipped to make independent judgments on the use of bioremediation on their lands, initially refused to permit its use. Later they adopted a position of refusing to rule it out completely in light of the state's conditional approval, but offered "no opinion" on the use of bioremediation on segments for which their review had been sought by the FOSC. Both the Chenega Corporation (with land holdings in Prince William Sound) and the Port Graham Corporation (with holdings on the Kenai Peninsula) endorsed "both intrusive and non-intrusive methods to remove the remaining oil from the environment, and particularly upon and adjacent to our lands."<sup>101</sup>

The FOSC addressed the question of how to treat tarmats in late May, developing through consultation with the TAG agencies the so-called "Tarmat Removal Protocol."<sup>102</sup> The protocol specified that, once tarmats were removed, any remaining oiled sediments should be manually raked and treated with Customblen "in consultation with other on-site state and land manager representatives."<sup>103</sup> Land managers' reactions to the protocol were generally favorable.

Some, notably U.S. Department of the Interior (DOI) agencies, expressed reservations, however. The National Park Service (NPS) wanted assurances that Customblen would not be applied in areas on or adjacent to NPS lands unless an NPS monitor was on site.<sup>104</sup> Admiral Ciancaglini, while reiterating his desire generally to honor the wishes of affected land managers, stated that in the many situations where tarmats occurred on intertidal lands under Alaska Department of Natural Resources (ADNR) jurisdiction (but adjacent to uplands under NPS control), ADNR's recommendations would take precedence.<sup>105</sup>

#### WILDLIFE DETERRENCE FOR INIPOL-TREATED SHORELINES

The procedures developed in 1989 to keep wildlife away from Inipol-treated shorelines were fairly elemental. They consisted of leaving workers behind until the next high tide came in to cover a recently treated area, or, for a longer-lasting deterrent effect, "scare eye" balloons or other measures that backyard gardeners might employ. But because Exxon's summer 1990 plan did not spell out the details of what would be done to deter wildlife, and because of temporary difficulties in securing adequate supplies of

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99. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 11 Apr. 1990, no. W977, FOSC Exxon Valdez Archive.

100. *Ibid.*

101. G. Evanoff (Chenega Corp.), letter to Comdr. G. A. Reiter, 4 May 1990, no. W1057; and P. Norman (Port Graham Corp.), letter to FOSC, 9 May 1990, no. W1043, FOSC Exxon Valdez Archive.

102. Capt. D. Zawadzki, letter to D. Gilman (Mayor, Kenai Peninsula Borough), 30 May 1990, no. W1870, FOSC Exxon Valdez Archive.

103. USCG, "Tarmat Removal Protocol," 18 June 1990, attachment no. W1824, FOSC Exxon Valdez Archive.

104. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 25 May 1990, no. W1843, FOSC Exxon Valdez Archive.

105. Rear Adm. D. E. Ciancaglini, letter to P. Gates (DOI), 18 June 1990, no. W1824, FOSC Exxon Valdez Archive.

balloons, concerns on the part of a number of the agency participants about how this aspect of the bioremediation program was being handled quickly surfaced.<sup>106</sup>

Exxon chose a "passive deterrent approach," relying on balloons and rope flagging that would remain in place through one tidal cycle, in accordance with advice it received from FWS and other wildlife agencies.<sup>107</sup> At one point round-the-clock observations were organized at eight different sites to confirm the efficacy of these measures.<sup>108</sup>

#### WORKER HEALTH AND SAFETY ISSUES IN 1990

From the very beginning of the Inipol application program in 1989 workers handling the chemical were required to wear personal protective gear, and in some cases, to wear respirators. Hazardous materials handling training, and instruction in the use of respirators, was also required.<sup>109</sup> An Exxon safety bulletin, issued as part of the "1990 Bioremediation Operational Guidelines," indicates that Inipol can cause severe eye and skin irritation, that butyl cellosolve (an active ingredient) can be absorbed through the skin, and that repeated skin contact can damage red blood cells.<sup>110</sup> These cautions are amplified in a May 1990 advisory opinion from the U.S. Occupational Safety and Health Administration (OSHA) detailing permissible exposure limits for Inipol, Customblen, and Corexit 9580 (then still under consideration for use).<sup>111</sup> The letter indicated that the 2-butoxyethanol in Inipol could also cause liver damage, and that inhalation can produce the same toxic effects as absorption through the skin.

The Occupational Safety and Health Administration was nevertheless of the opinion that, given the way Inipol was actually being applied, the levels of training and worker protection being provided by Exxon were quite adequate to protect workers. The state had imposed much more stringent requirements, however, particularly in requiring the use of respirators. This prompted the FOSC to seek release by the Alaska Department of Labor from some of the more onerous requirements it had placed on use of Inipol.<sup>112</sup> This request, however, served only to trigger an angry retort from Alaska's Department of Labor, asserting not only its primacy in regulating matters of health and safety, but also accusing federal OSHA officials of attempting to apply authorities they didn't have.<sup>113</sup>

106. P. Becker (NOAA), letter to Rear Adm. D. E. Ciancaglini, 7 May 1990, no. W1011; and FOSC, facsimile transmissions to Lt. Comdr. K. Keane, 25-26 May 1990, no. W1142, FOSC Exxon Valdez Archive.

107. R. L. Mastracchio (Exxon), letter to R. Bayliss (ADEC), 4 June 1990, W1177; and J. Phillips (Exxon), memorandum to R. L. Mastracchio (Exxon), 4 June 1990, no. W1178, FOSC Exxon Valdez Archive.

108. R. L. Mastracchio (Exxon), letter to Rear Adm. D. E. Ciancaglini, 5 July 1990, no. W1515, FOSC Exxon Valdez Archive.

109. Health and safety aspects of the bioremediation program are treated in detail in chapter 17, "Worker Health and Safety."

110. Exxon Alaska Operations, "Safety Bulletin," 18 May 1990, no. W1119, FOSC Exxon Valdez Archive.

111. C. Coe (OSHA), letter to Rear Adm. D. E. Ciancaglini, 29 May 1990, no. W1871, FOSC Exxon Valdez Archive.

112. Capt. D. Zawadzki, letter to R. Bayliss (ADEC), 30 May 1990, no. W1872, FOSC Exxon Valdez Archive.

113. T. E. Stuart, Jr. (Alaska Dept. of Labor), letter to C. Coe (OSHA), 13 June 1990, no. W1580, FOSC Exxon Valdez Archive.

#### ADEC'S PROPOSED 5 G/KG CLEANUP STANDARD

On 27 June, Admiral Ciancaglini, noting that the six week period of conditional approval granted by the state would soon lapse, requested that bioremediation applications be permitted to continue while data from the monitoring program was being evaluated.<sup>114</sup> The state granted this request, but reiterated its earlier position on not approving sites for reapplication of bioremediation compounds until after the monitoring data had been evaluated.<sup>115</sup>

The evaluation report that ADEC officials had anticipated emerged on 10 July, in the form of the Bioremediation Monitoring Program Interim Report. The report reinforced the conclusions of the weekly summaries that had preceded it, that reapplication on sites previously treated appeared warranted after about thirty days. On 19 July, and citing these findings, Exxon requested that general approval for reapplication of bioremediation be added to the limited approval that had been granted for test purposes.<sup>116</sup>

The state granted the reapplication approval the FOSC and Exxon sought on 20 July, subject to several stipulations.<sup>117</sup> The issues addressed in the letter of approval went well beyond the reapplication question, however, challenging the entire philosophy that had been guiding the bioremediation program. One of the included conditions, concerning the degree of site preparation necessary before bioremediation could be utilized, would, if accepted, represent a considerable redirection of all future bioremediation use. It touched off one of the most heated interagency exchanges of the spill.

Buttressed by a six page letter from ADEC Commissioner Kelso, that had been hand-delivered to the FOSC the day before,<sup>118</sup> the supplemental stipulations stated that:

Manual, mechanical, or other approved cleanup techniques, as prescribed in the Work Order, shall be used to remove tar mats, mousse, pooled oil, and residual oil in sediments down to a "mid-OR" [oily residue] condition, which is equivalent to five grams per kilogram.

Nutrients may be added to areas with oil concentration no greater than mid-OR or 5 g/kg.<sup>119</sup>

Alaska DEC's intent to couple a numerical standard to further use of bioremediation came as a considerable surprise. The letter not only reinforced the "lesser of two evils" view the state had of bioremediation,<sup>120</sup> but it also spoke forcefully and directly to a number of other themes that had pervaded state concerns—bioremediation must not

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114. Rear Adm. D. E. Ciancaglini, letter to R. Bayliss (ADEC), 27 June 1990, no. W1331, FOSC Exxon Valdez Archive.

115. C. Burgh (ADEC), letter to Rear Adm. D. E. Ciancaglini, 28 June 1990, no. W1523, FOSC Exxon Valdez Archive.

116. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 19 July 1990, no. W1321, FOSC Exxon Valdez Archive.

117. R. Bayliss (ADEC), letter to Capt. D. E. Bodron, 20 July 1990, no. W1371, FOSC Exxon Valdez Archive.

118. D. Kelso (ADEC), letter to Rear Adm. D. E. Ciancaglini, 18 July 1990, no. W1312, FOSC Exxon Valdez Archive.

119. R. Bayliss (ADEC), "1990 Supplemental Bioremediation Operational Stipulations" (attachment to letter to Capt. D. E. Bodron, 20 July 1990), no. W1371, FOSC Exxon Valdez Archive.

120. The letter stated that, "When properly applied and monitored, bioremediation causes less environmental damage than the spilled oil."

become a method of first resort, cleanup had to be conducted in as aggressive a manner as possible, and the state had to be a full partner in decisions on when cleanup was complete.

Bioremediation is best used as a polishing, or secondary treatment; every effort must be made first, by other methods, to get the concentrations of oil down to a level where bioremediation will finish the job in a reasonable amount of time.

The work at a given site should not be considered complete until the limit of the technology has been reached. We now have a useful formula for judging the limits of bioremediation under favorable conditions (5/gm/kg over the course of a year). If that target range is not met everywhere by this year, more work will be required in 1991.

Use of mechanical equipment should be substantially increased to improve the efficiency and effectiveness of every cleanup team.

Without the direct concurrence of the State of Alaska, no segment may be demobilized, no segment may be officially released, and no work may be deemed complete....We believe that state standards do not differ substantially from the National Contingency Plan, and concurrence is likely as long as the State is a full partner in all determinations made by the FOSC in the future.<sup>121</sup>

The state cited specific statutory authority to impose these standards and conditions, and put forward the view that there had already been recognition of its coequal authority in agreements reached with Admiral Yost during the previous summer. As it had often done in the past, the state took its case directly to the people through the news media, with Mr. Kelso and governor's aide Ernie Piper holding a televised news conference shortly after hand delivering the letter to Admiral Ciancaglini.

The basis for the state's proposed 5 g/kg standard was to be found in results then being reported from the EPA/Exxon Bioremediation Project studies—natural oil degradation rates in Prince William Sound were on the order of 2.3 g of petroleum hydrocarbons per year, and bioremediation was capable of producing a two to three times acceleration of that rate.<sup>122</sup> In other words, a sediment with a residual contamination level of 5 g/kg or less would in theory be completely clean after one year if bioremediation were applied.

The letter provoked a flurry of reactions from the major parties in the cleanup. Exxon general manager, Otto Harrison, characterized the state's proposals as "illogical and technically flawed," and found the attempt to use quantitative criteria to specify cleanup techniques and to direct field activities "unrealistic" and "disruptive to field operations." He noted further that if the 5 g/kg estimate of the level of accelerated biodegradation which could be expected to be achieved through bioremediation proved to be overly conservative (which he believed it was), then the effect of the operational restrictions the state proposed would be to delay the cleanup process.<sup>123</sup>

121. Kelso, letter to Ciancaglini, 18 July 1990.

122. USCG, "Summary of Meeting" (summary of Operations Steering Committee meeting, 10 July 1990), no. W1315, FOSC Exxon Valdez Archive, 2-3.

123. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 20 July 1990, no. W1537, FOSC Exxon Valdez Archive.

The State's goal of removing all the residual oil from the shorelines by the end of next summer is unrealistic and inconsistent with the recently completed Net Environmental Benefit analysis, the NOAA 1990 Cleanup Paper Program, and historical precedence....The remaining subsurface oil residue is not harming the ecosystem and any impact on human use is minimal.<sup>124</sup>

The NOAA Hazardous Materials Branch chief, John Robinson, was encouraged that the state supported continued use of bioremediation and accepted that its use was enhancing biodegradation of the remaining oil. But he echoed Mr. Harrison's concerns that the state was now proposing that the agreed upon decision process be abandoned, and that the use of mechanical means to remove the remaining oil be substantially increased.<sup>125</sup>

The current decision process is based on achieving the maximum oil removal that can be obtained from the use of all reasonable technology at our disposal. A fundamental element in this approach has been that no cleanup method should cause more harm to the environment than would be caused by the continued presence of residual oil.

The mutually agreed upon treatment decision process clearly allows more aggressive methods to be used in areas designated by the State of Alaska [and others]....However,...it is also important in such areas to remain alert to the possibility of causing injury to the very values we are trying to enhance....Achievement of [the 5 g/kg] such a standard would be difficult to measure, excessively time consuming, and subject to a wide range of possible errors.<sup>126</sup>

The Coast Guard response to the conditioned state approval was that the numeric standard would not be acceptable. "There is no scientific basis for the establishment of this or any other residual oil concentration as a standard by which to judge the adequacy of mechanical cleanup for a particular shoreline segment," wrote Admiral Ciancaglini.<sup>127</sup> His letter generally echoed the themes in the letters from Exxon and NOAA. But Admiral Ciancaglini also rejected completely the state claim to authority to establish the 5 g/kg standard, maintaining views expressed many times before, that only consultation with state authorities was required, and that he was the final judge of what level of cleanup met the applicable (i.e., federal) standards.

You may be assured that, in accordance with the understanding developed last year by Deputy Secretary Chao and Admiral Yost with Alaska State representatives and Exxon management personnel, I shall continue to consult with you and other Alaska State officials prior to determining the requirements of the Federal Statutes I am charged to carry out. Should Alaska Statutes impose additional requirements on State officials, or on Exxon, it will be the responsibility of those officials to see that those additional requirements are carried out.<sup>128</sup>

He delivered essentially the same message in starker terms to state OSC Randy Bayliss:

If the State of Alaska disagrees with this recommendation [to apply bioremediation following treatment to the limits of effectiveness for manual or mechanical methods, as

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124. Ibid.

125. J. Robinson (NOAA), letter to Rear Adm. D. E. Ciancaglini, 20 July 1990, no. W1410, FOSC Exxon Valdez Archive.

126. Ibid.

127. Rear Adm. D. E. Ciancaglini, letter to D. Kelso (ADEC), 26 July 1990, no. W1317, FOSC Exxon Valdez Archive.

128. Ibid.

judged by the FOSC] in an attempt to impose a numeric standard, I will release the subdivision to the State for further action rather than delay the treatment program. Implicit in this action is the understanding that the State of Alaska will assume *full* responsibility for any further treatment related activity on the affected subdivision [emphasis added].<sup>129</sup>

Although having all the earmarks of presenting a major obstacle to further progress in the cleanup, the conflict over the proposed 5 g/kg standard quietly went away instead. Admiral Ciancaglini hoped that, on a site-specific case-by-case basis, monitors in the field would still be able to come to agreement on treatment recommendations. He was prepared to pass over any subdivisions where disagreements arose in order to keep the cleanup moving. Although ADEC shoreline cleanup monitors were soon issued vials of sediment with 5 g/kg oil contamination, the experience of TAG, which continued to show a very high percentage of agreement among the response agency representatives on recommendations to the FOSC, seemed to validate this strategy. By mid-August, state representatives were seldom bringing up the question of the standard, and the cleanup was proceeding on roughly the same schedule, and following the same standards, as had been the case before the incident erupted.

By mid-July large numbers of subdivisions had been identified by Exxon field teams for reapplication of Inipol or Customblen. Of these, quite a few were subject to treatment constraints due to subsistence harvest, commercial fishing, or wildlife constraints. Exxon chose to concentrate treatments between 1 August and 15 September, and sought clearances from a variety of land managers for this purpose.<sup>130</sup> The clearances were generally granted, though some, particularly for anadromous streams, were granted only on a case-by-case basis.<sup>131</sup> By late August, ninety-four sites had been identified for third applications of bioremediation compounds.<sup>132</sup>

Throughout the summer of 1990, EPA continued to spearhead efforts to test a variety of bioremediation products and techniques as the cleanup continued. One test, begun in June on Elrington Island (on subdivision ER-020B), involved use of a stationary sprinkler system aimed at enhancing rates of biodegradation for subsurface oil. By August, EPA officials were reporting that these tests had produced a near eight-fold increase in degradation rates compared to other treatments.<sup>133</sup> Entreaties by these officials to expand the tests in hopes that this sprinkler technique would see widescale use in 1991 went unheeded, however, and 1991 was to mark the beginning of a scaling back to a more moderate approach in the continued treatment of oiled shorelines.

129. Rear Adm. D. E. Ciancaglini, letter to R. Bayliss (ADEC), 22 July 1990, no. W1372, FOSC Exxon Valdez Archive.

130. J. R. Phillips (Exxon), letter to M. Kuwada (ADF&G), 30 July 1990, no. W1450; J. R. Phillips letter to G. Evanoff (Chenega Corp.), 30 July 1990, no. W1709; and J. R. Phillips letter to P. Norman (Port Graham Corp.), 30 July 1990, no. W1373, FOSC Exxon Valdez Archive.

131. J. Morrison (ADF&G), letter to A. Teal (Exxon), 1 Aug. 1990, no. W1365, FOSC Exxon Valdez Archive.

132. R. Mastracchio (Exxon), internal memorandum to R. F. Buckley, S. A. Nauman, and W. I. Stillings (Exxon), 31 Aug. 1990, no. W1405, FOSC Exxon Valdez Archive.

133. H. Pritchard and C. Costa (EPA), letter to R. L. Mastracchio (Exxon), 7 Aug. 1990, no. W1466, FOSC Exxon Valdez Archive.



## BIOREMEDIATION IN 1991

An EPA planning document developed during the winter of 1990–91 noted that, while bioremediation efforts in 1991 could be expected to proceed as they had in 1990 under TAG, it was likely that the state would expect the use made of bioremediation in 1991 to be much more specifically targeted than it had been in 1990.<sup>134</sup> This proved to be the case as planning went forward for the third season's bioremediation program.

As in 1990, a workshop to discuss the results of the EPA/Exxon Bioremediation Monitoring Program and to plan for the next year was held in late winter.<sup>135</sup> No consensus planning document emerged from the meeting as had been the case in 1990, and the scientific and technical experts assembled at the meeting expressed a range of opinions about how the bioremediation program should proceed. But in other ways the planning problem was considerably simplified by political changes that had occurred in Alaska during the winter. The November election of Walter Hickel as governor brought significant changes in the ADEC leadership as well, and a mandate from the governor for state agencies to be more cooperative in the cleanup than they had been in the past. John Sandor was appointed as the new commissioner of environmental conservation, and Mr. Sandor retained Ernie Piper in the role of State OSC.

The FOSC had hoped to get early approval from the state for the use of bioremediation (by 1 March); a letter from Commissioner Sandor granting essentially unconditional approval to the use of bioremediation came on 5 March.<sup>136</sup> An attached staff decision paper, prepared by State OSC Piper, recommended that both Inipol and Customblen be approved for further use, but that "we should be very specific about where, when, and how it is used."<sup>137</sup> The staff memorandum, while positive about the potential of bioremediation, pointed out that the continuing lack of definitive scientific information on both toxicity and efficacy justified continued caution on the part of the state. "I come to the following conclusions," Piper wrote:

- At one end of our list of options, "no treatment" emerges as a more logical option for [the] large majority of subsurface oiled sites;
- At the other end, given the uncertainty surrounding the effectiveness of bio[remediation] in the field, I do not think it prudent to hand over our highest priority sites to bioremediation alone. We should insist on more certain methods of removal for the few remaining heavily oiled sites and others with high resource values; and
- I feel confident in recommending that we put most of our time and resources into high priority sites, and not divert resources to a widespread program of bioremediation that may not yield significant results.<sup>138</sup>

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134. EPA, "Bioremediation Update," 11 Dec. 1990, no. F036, FOSC Exxon Valdez Archive.

135. The EPA-sponsored meeting was held 19–20 February in Las Vegas, Nevada. A one-day Coast Guard-sponsored planning session followed the next day.

136. J. Sandor (ADEC), letter to Rear Adm. D. E. Ciancaglini, 5 Mar. 1991, no. F283, FOSC Exxon Valdez Archive.

137. E. Piper (ADEC), "Bioremediation decision for 1991 season" (memorandum to J. Sandor [ADEC], 27 Feb. 1991), no. F283, FOSC Exxon Valdez Archive.

138. *Ibid.*

In the state's view, by 1991 the major remaining problem was that of subsurface oil. Moreover, the fact that oil was no longer widely spread over vast areas justified assent by the state to a wider range of treatment options than it had favored in earlier years. These ranged from wider use of the "no treatment" recommendation, to mechanical tilling with bioremediation on the most heavily oiled shorelines, which "will not respond to bioremediation alone in an acceptable amount of time."<sup>139</sup>

Piper recommended that approval be based on the same application rates, delivery systems, and operational guidelines as in 1990, that the state reserve the right to add additional controls as needed, and that approval be conditioned on "full field compliance with all operational and site preparation guidelines required by state agencies."<sup>140</sup> The FOSC followed with the official go-ahead for the use of bioremediation in 1991 on 19 March.<sup>141</sup>

The scientific uncertainties Mr. Piper alluded to in his staff memorandum manifested themselves in recommendations and opinions from scientific experts that led in considerably different directions. Where the views of ADEC were heavily influenced by the findings of a group of well regarded experts it had commissioned to provide scientific "peer" review of the results of the joint bioremediation studies program,<sup>142</sup> Exxon was strongly influenced by the views of the EPA scientists closest to the program itself. The ADEC reviewer Scott Kellogg of the University of Idaho had concluded that the data collected by the program during 1990 failed to support the case that there was enhanced biodegradation going on as a result of bioremediation, while EPA's Hap Pritchard pointed to a three to five times enhancement of natural degradation rates as a result of bioremediation application.<sup>143</sup>

Exxon chose to go with the most optimistic of the possible scenarios, and as a result, recommended in its proposed 1991 Bioremediation Operational Guidelines that applications rates for Customblen be significantly increased over what they had been in 1990.<sup>144</sup> Exxon general manager, Otto Harrison, wrote that: "Based on [1990 science programs] this data it is clear that increasing Customblen application rates will provide a meaningful increase in biodegradation rates with minimal concern for toxic effects."<sup>145</sup>

State OSC Piper had already informed Admiral Ciancaglini that the state would not likely approve significant increases in application rates, "because the scientific data do not support the assumption that boosting nutrients further will boost degradation to any measurable degree."<sup>146</sup>

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139. Ibid.

140. Ibid.

141. Comdr. E. Page, letter to J. Sandor (ADEC), 19 Mar. 1991, no. F421, FOSC Exxon Valdez Archive.

142. Piper, memorandum to Sandor, 27 Feb. 1991.

143. Ibid.

144. O. Harrison (Exxon), attachment to letter to Rear Adm. D. E. Ciancaglini, 26 Apr. 1991, no. F104, FOSC Exxon Valdez Archive.

145. Ibid.

146. E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 11 Mar. 1991, no. F121, FOSC Exxon Valdez Archive.

In the majority of subsurface oiling cases, when faced with a decision between bioremediation and no treatment, we lean towards no treatment....Like NOAA, we believe some shorelines—probably limited to discrete clusters of heavily oiled subdivisions—will require tilling, possibly in combination with Customblen pellets. And like NOAA, we agree that—regrettably—at this point it makes more sense to leave much of the subsurface oil in place.<sup>147</sup>

Subsequent reactions by ADEC officials to Exxon's proposed plan served to sharpen the emphasis the state wanted to see in the 1991 program. For example, ADEC's John Bauer recommended that sediments underlying tarmats be removed completely whenever they were found to be contaminated with moderate to heavy oiling.<sup>148</sup> Ernie Piper, influenced by a presentation by a NOAA representative at the Las Vegas meeting, felt that naturally occurring nutrient levels in the sound were high enough in the spring to warrant postponing the entire program until mid-July.<sup>149</sup> A number of commentators in other agencies recommended that the wildlife deterrent measures (principally "scare eye" balloons) be eliminated.

While the Department of the Interior (DOI) supported the general recommendation that bioremediation be continued, both FWS and NPS continued to place severe restrictions on the use of Inipol on the upland areas they managed. Customblen could be used on a case-by-case basis only.<sup>150</sup> The DOI agencies were skeptical of Exxon's proposed increase in application rates, but concurred with the recommendation to eliminate the wildlife deterrent program.

As a result of the comments from these agencies, the FOSC requested modifications in Exxon's proposed plan, principally that Customblen dosages be increased only on a case-by-case basis as recommended by TAG, rather than in the general way Exxon had proposed.<sup>151</sup> The use of scare eye balloons to deter wildlife was dropped, and second and third applications of bioremediation compounds could be considered after 15 July (a time after which NOAA studies had shown natural nutrient levels in Prince William Sound waters to drop significantly). The reapplication interval was thirty days for Inipol, fifteen days for Customblen.<sup>152</sup> The effect was to continue the bioremediation program on much the same track it had ended on the previous year. Admiral Ciancaglini approved the 1991 bioremediation program on 8 June.<sup>153</sup>

As 1991 operations started, the areas the FOSC had approved for Inipol treatment amounted to some 31,000 square meters, requiring at most fifty drums (or 2,750 gallons) of the compound, according to Exxon estimates. This represented just 4 percent of the volume used, and 3 percent of the area treated, when compared to 1989<sup>154</sup> These figures should be viewed as more a measure of how much the entire shoreline treatment program had diminished by 1991 and not an indicator of diminished faith or

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147. *Ibid.*

148. J. Bauer (ADEC), memorandum to E. Piper (ADEC), 6 May 1991, no. F442, FOSC Exxon Valdez Archive.

149. E. Piper (ADEC), letter to Rear Adm. D. E. Ciancaglini, 7 May 1991, no. F441, FOSC Exxon Valdez Archive.

150. P. Gates (DOI), letter to Capt. D. E. Bodron, 14 May 1991, no. F212, FOSC Exxon Valdez Archive.

151. Rear Adm. D. E. Ciancaglini, letter to P. Gates (DOI), 28 May 1991, no. F252; and Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 8 June 1991, no. F242, FOSC Exxon Valdez Archive.

152. P. C. Madden (Exxon), memorandum to R. Mastracchio (Exxon), 13 July 1991, no. F135, FOSC Exxon Valdez Archive.

153. Rear Adm. D. E. Ciancaglini, letter to O. Harrison (Exxon), 8 June 1991, no. F242, FOSC Exxon Valdez Archive.

154. P. C. Madden (Exxon), memorandum to J. B. Wilkinson (Exxon), 29 May 1991, no. F571, FOSC Exxon Valdez Archive.

reliance on bioremediation. The cleanup would neither use bioremediation in lieu of more aggressive cleanup techniques as ADEC had feared, nor would it embark upon a grander scale bioremediation "demonstration of concept" program as some EPA officials had hoped.

Among the few remaining sticking points in the bioremediation program as operations got underway in 1991 was the continued ambivalence of some Native corporations to the use of bioremediation on the lands they managed. Confusion over the policy of the Chenega Corporation led Exxon initially to drop a number of subdivisions on Chenega lands from the list of sites it was planning to bioremediate. A clarification by Chenega's board of directors in mid-June settled the matter, with the result that bioremediation could again be used on several especially problematic sites on Evans and Latouche islands, under the same consultative arrangements that had been used in applying bioremediation to Chenega lands in 1990.<sup>155</sup>

On 29 August, Otto Harrison notified the FOSC that all scheduled bioremediation treatment for 1991 had been completed. Fifty-seven subdivisions had been treated at least once, fifty-five subdivisions had received at least two treatments, and thirty-seven had received a third application.<sup>156</sup>

In November, the results of the 1991 Bioremediation Monitoring Program, that had been reduced in scope to focus on whether ammonia-induced toxicity was of concern, were released. They showed that ammonia concentrations at test sites had generally fallen within acceptable limits.<sup>157</sup>

## BIOREMEDIATION IN 1992

The small-scale "final" cleanup that took place in 1992 used bioremediation in much the same way it had been utilized in 1991. Perhaps more importantly, 1992 proved to be the year in which the scientific studies begun in 1989, which had played to mixed reviews through most of their history, finally matured to the point that a broad consensus on the future of bioremediation began to emerge. The nagging question of the quality of the science being done in support of the bioremediation program came to a head in the winter of 1990–91 when ADEC engaged a panel of distinguished scientists to review the results of the 1990 Bioremediation Monitoring Program. The reviewers focused their most critical comments on (a) the efforts that had been undertaken to "prove" that the addition of bioremediation compounds enhanced biodegradation rates over what they would have been otherwise, and (b) that it was not solvent action that was removing oil from shorelines when Inipol was applied.<sup>158</sup> The reviewers found much to criticize both in the design of the studies and in the analytical procedures used to interpret the results.

155. G. Evanoff (Chenega Corp.), letter to M. Taylor (Exxon), 15 June 1991, no. F80, FOSC Exxon Valdez Archive.

156. O. Harrison (Exxon), letter to Comdr. D. Maguire, 29 Aug. 1991, no. F57, FOSC Exxon Valdez Archive.

157. L. C. Dash (Exxon), letter to E. Piper (ADEC), 25 Nov. 1991, F477, FOSC Exxon Valdez Archive.

158. ADEC, "1990 Bioremediation Monitoring Program Summary of Reviewer's Comments," no. F807, FOSC Exxon Valdez Archive. This document includes in their entirety written comments of three distinguished scientific reviewers commissioned by ADEC in Jan. 1991 to review Bioremediation Monitoring Program results obtained through Dec. 1990.

In particular, efforts to identify a "conservative" tracer whose presence in samples could be used to determine the rate of microbial decomposition had been hampered by a number of methodological difficulties. The upshot was, in the words of reviewer Scott Kellogg of the University of Idaho, that "Overall there simply was no significant difference between treated and untreated areas."<sup>159</sup> The technical criticism had an impact that was hard to ignore. In July of 1991, Exxon officials were informed by the Prince William Sound Regional Citizen's Advisory Committee (RCAC) that it had recommended that bioremediation *not* be included in the Alyeska Oil Spill Prevention and Response Plan, then being prepared in compliance with the Oil Pollution Act of 1990.<sup>160</sup> The critiques submitted to ADEC were cited as a primary reason.

In the winter of 1991–92, Exxon and EPA officials acknowledged the weaknesses in the earlier work and proposed to develop a new "normalized hopane method," suggested by one of the reviewers, to address the weakness in showing that biodegradation was indeed enhanced when bioremediation was applied.<sup>161</sup> The method and subsequent laboratory results demonstrating its effectiveness were well received, and reviewer Kellogg found it "likely" that the method would succeed in affirming that the bioremediation efforts in Prince William Sound had indeed produced an enhancement in degradation rates.<sup>162</sup> In June of 1992, ADEC Commissioner John Sandor informed EPA officials of its interest in participating in future studies to verify the "new normalized hopane ratio method as an accurate indicator of oil biodegradation,"<sup>163</sup> and even endorsed continued study of the sprinkler application system that EPA had been forced to abandon in 1990.

## SUMMARY

Reflecting on the considerable controversy that bioremediation had engendered, ADEC officials, Alex Viteri and Ernie Piper, wrote in 1992 that they felt the situation had been very much a risk communication problem, that would:

Under the best of circumstances, require a sensitive and systematic approach by the government. The public, skeptical of new technology under normal conditions, was fearful of complicating a disaster whose effects already seemed beyond human control. The prospect of using bioremediation—scientists fiddling with microbes and the balance of natural processes—seemed particularly dangerous to the public and to many policy makers.

The public could not understand why basic questions on the effectiveness of enhanced bioremediation...were not clearly understood before this research project was going to be expanded to its shorelines. Hurried and poorly crafted communication techniques used by the parties increased an already existing lack of public confidence. It underscored the public's fear of a second pending disaster. And, at native or privately owned sites, it caused significant delay of the product's use.<sup>164</sup>

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159. S. Kellogg (Univ. of Idaho), letter to J. Gibeaut (ADEC), 11 Feb. 1991, no. F807, FOSC Exxon Valdez Archive.

160. P. C. Madden and J. B. Wilkinson (Exxon), memorandum to M. Fedak (Exxon), 10 July 1991, no. F84, FOSC Exxon Valdez Archive.

161. EPA and Exxon, "EPA/Exxon Bioremediation Review," 17 Jan. 1992.

162. S. Kellogg (Univ. of Idaho), telephone conversation with Dr. T. Leschine (FOSC staff), 7 Feb. 1992, no. F750, FOSC Exxon Valdez Archive.

163. J. Sandor (ADEC), letter to J. Skinner (EPA), 2 June 1992, no. F297, FOSC Exxon Valdez Archive.

164. A. Viteri and E. Piper (ADEC), "Lessons and Future Needs: The T/V Exxon Valdez Oil Spill Response," Mar. 1992, no. F808, FOSC Exxon Valdez Archive, 8 and 12.

The EPA officials who extolled the virtues of bioremediation at public meetings without addressing tradeoffs or uncertainties may have exacerbated the problem with the public pointed to by these state officials. Former state OSC, Ernie Piper, for example, expressed surprise at hearing one EPA scientist exclaim at a public meeting, in referring to Inipol, that "This stuff is amazing!"<sup>165</sup> The point is similarly made by the Coast Guard's Kodiak Incident Command Post (ICP) commander, who felt compelled to alert the FOSC that a presentation in Kodiak in which EPA representatives had "touted Inipol as an excellent treatment method," had provoked questions from the audience indicating "incredulity" at the way the product was being presented. "I heard the comment that Exxon was trying too hard to demonstrate the positive without denoting the negative," he reported.<sup>166</sup>

Once the decision to conduct scientific studies in support of the bioremediation program had been made, it would become necessary to deal with the uncertainties that such studies inevitably raise if they are well done. It became extremely difficult to support the kind of firm yes/no decisions a massive and systematic program of cleanup seems to demand in the face of technical and scientific criticism that left room for doubt about just how efficacious bioremediation really was. The problem for the FOSC was exacerbated when bioremediation was hailed by EPA officials, on the basis of very preliminary results, to represent a major breakthrough.<sup>167</sup>

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165. E. Piper (ADEC), conversation with Dr. T. Leschine (FOSC staff), Anchorage, 7 July 1992, no. F768, notes, FOSC Exxon Valdez Archive.

166. Kodiak ICP, teletype message to WO3/FOSC, 9 Mar. 1990, no. W627, FOSC Exxon Valdez Archive.

167. C. Medred, "EPA Chief Likes Bugs That Eat Oil," *Anchorage Daily News*, 7 Aug. 1989, sec. B; and C. Medred, "Bacteria Devour Spilled Oil," *Anchorage Daily News*, 7 Aug. 1989, sec. A.



# CHAPTER 11. CULTURAL RESOURCE CONSTRAINTS

## OVERVIEW

The area where the *Exxon Valdez* spill response took place has a human history that spans perhaps seven thousand years.<sup>1</sup> The cleanup took workers into areas containing artifacts and relics from the area's earliest inhabitants, raising intense feelings among Native groups that the cleanup might disturb burial grounds or human remains associated with early Native settlements.

At the time the spill occurred, there were hundreds of important archaeological sites, both in Prince William Sound and western Alaska. However, most Alaskan prehistoric locations had not been mapped, documented, or protected. While historians and archaeologists suspected that a wealth of archaeological sites existed, their locations and contents were largely unknown. Archaeological studies had been conducted in the area as early as the 1930s, but generally the work has been episodic.<sup>2</sup> Uncertainties about the whereabouts and degree of protection that could be afforded cultural resources complicated planning for the cleanup. Moreover, because no previous spill had affected areas so rich in archaeological history, the Federal On Scene Coordinator (FOSC) was largely unprepared to deal with cultural resource issues as part of an oil spill cleanup. The cultural resource issues that are covered in this chapter, include: (a) defining a role for cultural resource agencies and establishing a working relationship between the FOSC, Exxon, and the cultural resource agencies and groups; and (b) integrating cultural resource issues and constraints into the conduct of the cleanup.

Because the precise location of early settlements and other signs of human activity was not known, a sense of caution prevailed. "The best way to protect the area's cultural resources," said one archaeological expert, "would be to stay clear of them altogether, even after the spill."<sup>3</sup> Since this was not deemed feasible, it became necessary to preevaluate worksites in order to ensure that the planned cleanup measures would not damage or destroy important links to the past. Measures had to be taken to protect against invasion of nearby archaeological sites. Where it was necessary to do work in the vicinity of an archaeological site, precautions had to be taken to minimize disruption. It also became necessary to find ways to discourage the removal of relics. Vandalism was still another problem, occasionally necessitating costly investigations.<sup>4</sup>

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1. J. C. Haggarty et al., *The 1990 Exxon Valdez Cultural Resource Program: Site Protection and Maritime Cultural Ecology in Prince William Sound and the Gulf of Alaska* (Anchorage: Exxon Shipping Co. and Exxon Co. U.S.A., 1991), 1.

2. R. Pagano (Associated Press), "Exxon Spill Cleanup Plan Protects Archaeological Sites," *Anchorage Daily News*, 13 May 1990. Fredrica de Laguna participated in three archaeological expeditions to Prince William Sound in 1930, 1933, and 1953. The 1933 visit was under the sponsorship of the National Museum of Denmark and the University of Pennsylvania Museum (Fredrica de Laguna, *Chugach Prehistory—The Archaeology of Prince William Sound, Alaska* [Seattle: University of Washington Press, 1956]).

3. Pagano, 13 May 1990.

4. Dr. C. M. Mobley et al., *The 1989 Exxon Valdez Cultural Resource Program* (Anchorage: Exxon Shipping Co. and Exxon Co. USA, 1990), 133–145.



## APPLICABLE STATUTES AND AGENCY CONSTRAINTS

Three statutes (two federal and one state) provided the underpinning of Exxon's Cultural Resource Program. The federal statutes are the Archaeological Resources Protection Act of 1974 (ARPA), and the National Historic Preservation Act of 1966 (NHPA). The major state legislation is the Alaska State Historic Preservation Act. The state act prohibits "unauthorized disturbance to paleontological, archaeological, or historical properties on state-administered lands, and provides a permitting system for investigations."<sup>5</sup> With the granting of a permit for Exxon field operations, the (Alaska) state historic preservation officer (SHPO) assumed a key role in ensuring compliance with both state permit provisions and federal laws.<sup>6</sup> State historic preservation officers are creations of the NHPA and are charged with "consulting with and assisting" federal agency officials in "identifying historic properties, assessing effects upon them, and considering alternatives to avoid or reduce those effects."<sup>7</sup>

Exxon organized its cultural resource management (CRM) program around a group of twenty-six professional staff members, all with regional experience and/or advanced degrees. Most were archaeologists, while others had anthropological backgrounds.<sup>8</sup> Dr. Charles M. Mobley, a professor of anthropology and Alaska Native studies at Sheldon Jackson College (Sitka, Alaska), was appointed director of the program.<sup>9</sup> The need for a CRM program had initially been raised on 4 April 1989.<sup>10</sup> The response's initial cultural resource work began at Naked Island, on 13 April, and field work continued throughout the summer with shutdown of the year's operations occurring on 15 September.<sup>11</sup>

A state land use permit authorized shoreline cleanup operations on all "state owned tide and submerged lands." Stipulations included:

All site specific shoreline cleanup work plans shall incorporate the timely recommendations of the State Historic Preservation Officer....If, in connection with any of the operations authorized under this permit, Exxon, its officers, agents, employees, contractors, subcontractors, or their personnel encounter any previously undiscovered paleontological, archaeological, or historic sites or artifacts, field operations shall be suspended on that portion of the project area, and the Director of Exxon's Cultural Resource

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5. Alaska Statutes, Title 41 (Public Resources), ch. 35 (Historic Preservation), article 1 (The Alaska Historic Preservation Act of 1971).

6. Mobley et al., 3. State historic preservation officer involvement in the application of federal laws is stipulated in section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

7. 36 CFR 800.1 (c)(ii). In some states the state historic preservation officer has only that responsibility. In Alaska, that position has been held by J. Bittner throughout the spill response. In addition to being SHPO, J. Bittner also heads the Alaska Office of History and Archaeology. The position is by governor's appointment.

8. According to R. Shaw of the Alaska Office of History and Archaeology, the state required that archaeologists hired for the Exxon Valdez response project meet "secretary of interior standards." While ensuring high levels of professional competence, the effect was to limit the pool of persons eligible to serve on the Exxon CRM staff.

9. A. R. Teal (Exxon), letter to M. Chittick (Chugach Alaska Corp.), 22 Apr. 1989, no. C641, FOSC Exxon Valdez Archive. Earlier, VECO, the major Exxon cleanup contractor had engaged a small staff (three) of archaeological personnel.

10. Mobley et al., 95. The need for a cultural resource protection program was pointed out by a U.S. Forest Service's (FS) incident commander at an interagency shoreline cleanup committee (ISCC) meeting held on the date indicated. Glenn Bacon of Alaska Heritage Resource Group, recommended a key role for Chugach Alaska Corporation. Although the Chugach Alaska Corporation was not in a position to assume that role, Bacon's actions helped to initiate cultural resource activities.

11. Mobley et al., 1.

Program shall be immediately notified and State Historic Preservation Officer notified within 24 hours.<sup>12</sup>

Federal regulations influencing cleanup planning and operations are contained in 36 CFR 800 (Protection of Historic and Cultural Properties), regulations applicable to a "federal, federally assisted, or federally licensed action, activity, or program." The regulations describe collaborative arrangements for such tasks as making cleanup decisions for cultural resource areas. For shoreline segments to be afforded the protections of section 106 of the NHPA, it was necessary that they be "included in or eligible for inclusion in the National Register of Historic Places."<sup>13</sup> Since few of the impacted segments were already on the register, it became necessary to find a means to ensure protection under section 106, and to do so in an expeditious manner.<sup>14</sup>

The normal procedures for adding new locations to the register do not lend themselves to rapid action. Nevertheless, rapid action was necessary to protect cultural resources, some not as yet discovered, as the cleanup began. Exxon archaeologists, state historic preservation authorities, and U.S. Forest Service (FS) cultural resource personnel decided to seek a special arrangement. With the consent of the Advisory Council on Historic Preservation (ACHP), it was agreed that as sites were discovered containing archaeological and/or historic materials, structures, or other qualifying signs, each would be declared immediately to be eligible for inclusion on the register.<sup>15</sup> This procedure permitted many shoreline segments to come quickly under the protection of section 106 of NHPA.<sup>16</sup>

Each property that was declared to have historic and/or archaeological significance required an inventory of cultural resources and determination of appropriate mitigation measures at an accelerated pace to permit work crews to get about the task of cleanup.<sup>17</sup> Normally, the parties to an undertaking under the NHPA enter into a memorandum of agreement (MOA) outlining terms for collaboration. In the case of the *Exxon Valdez* spill, however, negotiations were lengthy (there were eight revisions of the original document), and no final MOA was signed until May of 1990.<sup>18</sup> It thus

12. Land use application and permit, issued to Exxon Company U.S.A., by state of Alaska (Department of Natural Resources, Division of Land and Water Management [Mat-Su Area Office]), 21 Apr. 1989, no. C1184, FOSC Exxon Valdez Archive. See attachment A, sections 1 and 9–10.

13. 36 CFR 800.1 (a). The register is a list of properties maintained by the secretary of the interior. The secretary of the interior also prescribes criteria to establish eligibility for places to be entered into the register.

14. Section 106 requires that "Federal agency heads, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking and, prior to approval of such undertaking, afford the Council [Advisory Council on Historic Preservation] a reasonable opportunity to comment."; and 36 CFR 800.1 (Authorities, Purposes and Participants).

15. The Advisory Council on Historic Preservation monitors compliance with federal laws. The U.S. Forest Service was the lead agency for the *Exxon Valdez* spill. The Alaska SHPO is an official liaison to the group.

16. R. Shaw (Alaska Office of History and Archaeology), telephone conversation with Lt. Comdr. R. Gaunt, 15 Sept. 1992, no. F178, notes, FOSC Exxon Valdez Archive. Lacking a formal memorandum of understanding, the plan to include sites as register-eligible was described as a "necessary verbal agreement."

17. Determination of effects involves evaluating whether or not specific actions are likely to have adverse effects upon the "value and integrity" of specific sites. "Mitigation" was used to minimize or avoid those adverse effects in the event that work had to be performed at a cultural resource site.

18. "Exxon Valdez Oil Spill Cleanup in Prince William Sound, the Gulf of Alaska and Beyond" (memorandum of agreement, control no. 89-412, revision 8), no. W1576, FOSC Exxon Valdez Archive. Signed by the participating parties 7 May through 15 June 1990. Parties to the agreement were Rear Adm. D. Ciancaglini (FOSC), and spokespersons from the FS, the Alaska Department of Environmental Conservation (ADEC), Exxon, and the Advisory Council on Historic Preservation. There were four "concurring parties" and thirty-nine Native "consulted" parties mentioned in the document.

became necessary to operate without formal agreements throughout the entire first year of the response.

Among the 607 sites with which the CRM program was involved in 1989 and 1990, a total of 387 were located on lands controlled by one of the three federal government land management agencies. Of these, 198 (51 percent) were located on U.S. Fish and Wildlife Service (FWS) lands, 127 (32 percent) were on U.S. Forest Service lands, and the remaining 62 (16 percent) were found within national parks.<sup>19</sup> It was necessary for Exxon to negotiate special use and ARPA permits with each of these agencies. The ARPA permits allowed investigations of cultural resources to go forward, but the act provided stiff penalties for "unauthorized disturbance to cultural resources on federally administered lands."<sup>20</sup>

Although authority had existed for nearly two decades to nominate properties on Alaskan federal lands for inclusion on the National Register of Historic Places, the areas involved were too extensive, and the costs of exploratory studies too high, to permit any comprehensive undertaking. The FWS, for example, with "77,000,000 acres of largely uninventoried National Wildlife Refuge lands," saw "planning and implementing comprehensive inventories [as] a distant dream."<sup>21</sup> The resulting lack of data complicated the cleanup, as the compilation of inventories needed to be made a part of the process. Despite these information limitations, it remained the responsibility of the FOSC to ensure that applicable cultural resource protection measures were properly observed. At the same time, it was also necessary to ensure that the cleanup was moving forward at a satisfactory pace.

#### LIMITATIONS ON FOSC ABILITY TO ACCOMMODATE CULTURAL RESOURCES

The Federal On Scene Coordinator's role in cultural resources protection was summarized in the memorandum of agreement adopted in 1990. The FOSC was to "direct Exxon's compliance" with applicable laws and regulations, subject to obligations that included minimizing damage to the area's cultural resources, maintaining two-way dialogue with the agencies and Native groups, and complying with all applicable laws relating to cultural resource protection.<sup>22</sup> Although the memorandum of agreement was not formalized until 1990, these obligations fell upon the FOSC from the beginning.

Archaeological considerations represent unfamiliar territory for the Coast Guard and many of the other agencies prominent in spill response. According to State Historic Preservation Officer Judy Bittner, of the Alaska Office of History and Archaeology (AOHA), "This is the first time they [the Coast Guard] dealt with it, so it was new for everybody, it was new for NOAA [National Oceanic and Atmospheric

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19. Haggarty et al., tables 14, 15, 16, 187, 188, and 193. Each of these federal agencies had active staff members who were professional archaeologists.

20. 36 CFR 296.16 (a)(2). The section provides for penalties covering "full cost of restoration and repair of archaeological resources damaged plus the archaeological or commercial value of archaeological resources destroyed or not recovered."

21. Mobley et al., 3. See also C. E. Deters, "Fish and Wildlife Service Region 7 (Alaska)," *Federal Archeology Report 2* (1989): 4-5.

22. "Exxon Valdez Oil Spill Cleanup in Prince William Sound, The Gulf of Alaska and Beyond."

Administration]...the science advisories, and the ISCC [Interagency Shoreline Cleanup Committee]...nobody really knew how to deal with it." Ms. Bittner reported that a normal Coast Guard/NOAA response to CRM questions was, in effect, that neither agency had to consider cultural concerns before.<sup>23</sup> To find qualified archaeological expertise, the FOSC looked to another federal agency, the U.S. Forest Service (FS). U.S. Forest Service archaeologist, John Mattson, provided advice to the FOSC "through his chain of command," which meant that another FS supervisor, John Knorr, served as an intermediary.<sup>24</sup> In the view of some observers, the FOSC ought to have had more cultural resource assistance than the FS was able to provide.<sup>25</sup>

### THE 1989 CULTURAL RESOURCE PROGRAM

In the absence of a formal agreement among agencies, it was necessary to devise ad hoc cultural resource protection arrangements. A shoreline evaluation system was established in which a shoreline cleanup assessment team (SCAT), consisting of a geomorphologist, a biologist, and an archaeologist, surveyed shoreline sections in order to produce information about the oiling condition and the cultural, biological, and geomorphological characteristics of segments to be treated.<sup>26</sup> The archaeologist's role was to assess present and potential impacts upon archaeological sites. As many as seven SCATs were active during the busiest periods of 1989.<sup>27</sup> Recommendations from SCAT crews were forwarded to the interagency shoreline cleanup committees (ISCCs) and multi-agency advisory committees (MACs) for review, and were then forwarded to the FOSC for final approval.

The threat of accidental damage to artifacts influenced the choice of cleanup methods. If artifact scatter had been noted on a particular segment, for example, the usual procedure was to avoid use of such mechanical equipment-dependent techniques as the tilling of the shorelines. As chemical compounds came into use in the form of bioremediation agents, the possible impact upon artifacts also became an issue. When work on specific segments was projected to involve large numbers of people, strategies had to be devised to minimize traffic into areas where cultural resources might be found. The mere presence of heavy equipment, including boats, held potential for damage to cultural artifacts.<sup>28</sup> The role of the SCAT archaeologists (and their successors after the approach to shoreline decision making was modified) was critical.

In addition to serving as members of SCAT teams, archaeologists had other important roles in the Cultural Resource Program. Shoreline cleanup assessment team

23. J. Bittner (AOHA) and C. Holmes (AOHA), interview by Lt. Comdr. R. Gaunt, Anchorage, 3 Sept. 1992, no. F679, tape, FOSC Exxon Valdez Archive.

24. J. Mattson (FS), interview by Lt. Comdr. R. Gaunt, Anchorage, 23 Sept. 1992, no. F710, tape, FOSC Exxon Valdez Archive. Mattson reported that he was assigned to the *Exxon Valdez* project on 3 Apr. 1989, and that he arrived in Valdez on that date. Things were "hectic," in Mattson's view, in the early days, and a particular problem was that the Coast Guard had failed to recognize that archaeological resources might be found in intertidal and even submerged land areas. He further suggested that the failure (of the Coast Guard and other agencies) to accept the Incident Command System may have accounted for some of the problems encountered in the startup phase of the response.

25. Shaw, telephone conversation with Lt. Comdr. Gaunt, 15 Sept. 1992.

26. Exxon, "Field Shoreline Treatment Manual," 3 June 1989, sec. 2 (Shoreline Cleanup Operations), no. C1886, FOSC Exxon Valdez Archive, 2-8.

27. Exxon, "Shoreline Clean-Up Plan," 23 July 1989, no. C1132, FOSC Exxon Valdez Archive.

28. Mobley et al., 101-114.

archaeologists provided training programs for cleanup personnel. The emphasis was on providing background that would help workers recognize cultural resources, and on familiarizing them with applicable laws and penalties for disturbance of archaeological sites and artifacts (figure 11.1).<sup>29</sup> When work was taking place at or near particularly sensitive sites, an archaeologist was assigned to monitor the work. When tests of shoreline dispersants and bioremediation compounds were conducted, archaeologists helped to project potential impacts on cultural resources. They also helped conduct reassessment and postassessment evaluations of areas where treatment had taken place.<sup>30</sup> In addition to the direct cleanup related work accomplished by SCAT team archaeologists, the information gathered during the summer months strengthened the previously limited historic and archaeological record.<sup>31</sup>

By the close of the 1989 cleanup season, fifty-three hundred miles of shoreline had been videotaped, and thirty-four hundred miles had been subjected to SCAT evaluation. Among the 271 historical and/or archaeological sites that were discovered, were wrecked vessels (7), mines (5), fox farms (14), prehistoric villages (44), cannery sites (6), forts (6), and a broad assortment of prehistoric dwelling sites, burial places, and artifact locations.<sup>32</sup> Often, sites consisted of little more than surface depressions where early dwellings or cache pits had been located, while others were deposits of refuse called "middens." Newly discovered sites were widely distributed, with the greatest numbers (123) being found on Kodiak Island. Many of the oldest sites were believed to be related to early Chugach and Koniag Natives, original inhabitants of the Prince William Sound and Kodiak areas, respectively.<sup>33</sup>

The 1989 cleanup yielded 273 artifacts that were taken into custody by Cultural Resource Program personnel.<sup>34</sup> This led to the question of who "owned" these objects. State authorities maintained that the intertidal zone was an area belonging to the state of Alaska, and artifacts found there were, therefore, under the state's authority. Federal land managers argued that when lands were under National Park Service (NPS), U.S. Forest Service, or U.S. Fish and Wildlife Service control, the items found were federal property. To complicate matters further, intertidal lands in Alaska have been locked in an ongoing jurisdictional dispute between federal and state agencies.<sup>35</sup> Native Alaskans pressed the point that artifacts were rightfully the property of the

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29. In addition to possible legal penalties to which offending Exxon or Exxon contracted workers might be subject, they faced immediate dismissal from employment if involved in "vandalizing, moving, or taking away cultural materials." This policy appears in March 1992 FINSAP handbook, in addition to other sources (Exxon, "FINSAP 1992 Shoreline Assessment Program," March 1992, no. F285, FOSC Exxon Valdez Archive).

30. Mobley et al., 9.

31. Pagano, 13 May 1990. Before the spill, according to C. M. Mobley, director of Exxon's Cultural Resource Program, there were about three hundred known sites of archaeological importance in the spill area. The number more than doubled, including sites of historic interest during the next year, reported Mobley.

32. Mobley et al., table 20 (Primary Site Types and Attributes for 271 AHR Sites), 156–161.

33. Mobley et al., 159–161.

34. Mobley et al., appendix with artifact descriptions by W. B. Workman and K. W. Workman, 259. Workman and Workman report "267 artifacts from 40 archaeological sites, in addition to 6 separate bell and buoy parts collected at SEW-494."

35. R. Betts et al., *Site Protection and Oil Spill Treatment at SEL-188* (Anchorage: Exxon Shipping Co. and Exxon Co. USA, 1991), 43. Report submitted by Exxon Shipping Corp. et al. pursuant to DNR Land Use Permit ARO-9845-9500-008 and NPS ARPA Permit 89-Kenai Fjords-ARO-001.

Native heritage, regardless of where they were found. In the meantime, Exxon held possession of the actual objects.<sup>36</sup>

Some artifacts were collected by CRM personnel, while others were left in place. Artifacts were taken into custody when, in the judgment of on-site archaeologists, they were at risk to pilferage or loss.<sup>37</sup> Archaeologists saw this arrangement as protective, rather than exploitative.<sup>38</sup>

Of particular concern to Native residents of spill-impacted areas was that the presence of legions of cleanup workers would lead to disturbance of sites they considered sacred. It was feared that the attention being focused upon lands historically inhabited by Native peoples might encourage an invasion of relic collectors, perhaps even years later. Of paramount importance to Native leaders was the confidentiality of information related to site locations and other site specifics.<sup>39</sup> Regulations implementing the ARPA are designed to protect the confidentiality of locations and other information related to cultural resources,<sup>40</sup> and the agencies involved tried to respect the wishes of Native leaders.<sup>41</sup>

One measure employed to ensure confidentiality was the use of a code system in published CRM reports, submitted by Exxon in compliance with land use permits. This was intended to make it extremely difficult for outsiders to learn the precise locations of archaeological resources. Data describing the exact whereabouts of sites was contained in a second volume of the Exxon report, that has been very closely held. Access continues to be restricted.<sup>42</sup>

The sensitivity of cultural resource issues was well illustrated when Exxon planned a public display of collected artifacts at Valdez in August 1989. The display was intended to allay fears about the well-being of archaeological sites and relics.<sup>43</sup> But Natives (from the Chenega and Eyak corporations) protested that the relics were theirs, not Exxon's, and that they had not been consulted about the planned display. The planned showing was subsequently canceled.<sup>44</sup>

36. Bittner and Holmes, interview, 3 Sept. 1992. Ms. Bittner said that dispute over "who owned" collected artifacts was substantially resolved when the parties determined that Exxon would simply keep custody, that the artifacts would then be safe, and that they would eventually be curated.

37. Mobley et al., 123.

38. Bittner and Holmes, interview, 3 Sept. 1992. In one example, several artifacts were "rescued" from refuse bags consisting of material already collected and bagged by unsupervised workers at Kodiak Island. Had an alert archaeologist not arrived and checked the contents of those containers, the artifacts would probably have been lost forever at the hazardous materials disposal site in Oregon.

39. Chugach Alaska Corp., "Policies on Cultural Resources," 28 May 1989, no. C469; and L. L. Johnson (Chugach Alaska Corporation), letter to FOSC, 14 July 1989, no. C976, FOSC Exxon Valdez Archive.

40. 36 CFR 296.18 (b)(5). The item specifies prohibition of disclosure of such information outside of a closely held group of "need-to-know" agencies. In the memorandum of agreement (spring 1990) the FOSC was directed to ensure Exxon's compliance with 36 CFR 296.18 in a "timely manner."

41. Cultural Resources Protection Working Group, "Summary Discussion of the Third Meeting of the Valdez Oil Spill Cultural Resources Working Group," 3 Jan. 1990, no. W1882, FOSC Exxon Valdez Archive. Exxon spokespersons C. Mobley and A. Teal reported that the second volume would be distributed (only) to permitting agencies. The FOSC was not issued a volume 2 copy.

42. J. Bittner (AOHA), letter to C. M. Mobley (Exxon), 20 Dec. 1989, no. W616, FOSC Exxon Valdez Archive. Another letter which reflected intense sentiments related to confidentiality of cultural resource data is L. L. Johnson (Chugach Alaska Corp.), letter to J. Bittner (AOHA), 8 Dec. 1989, no. W1934, FOSC Exxon Valdez Archive.

43. Mobley et al., 118.

44. Shaw, telephone conversation with Lt. Comdr. Gaunt, 15 Sept. 1992; and M. Enge, "Oil Company Cancels Exhibit of Native Artifacts," *Anchorage Daily News*, 18 Aug. 1989, sec. D. This article reported that Native leaders were "very

## STONE ARTIFACTS WHICH MAY BE DISCOVERED BY BEACH CLEANUP CREWS

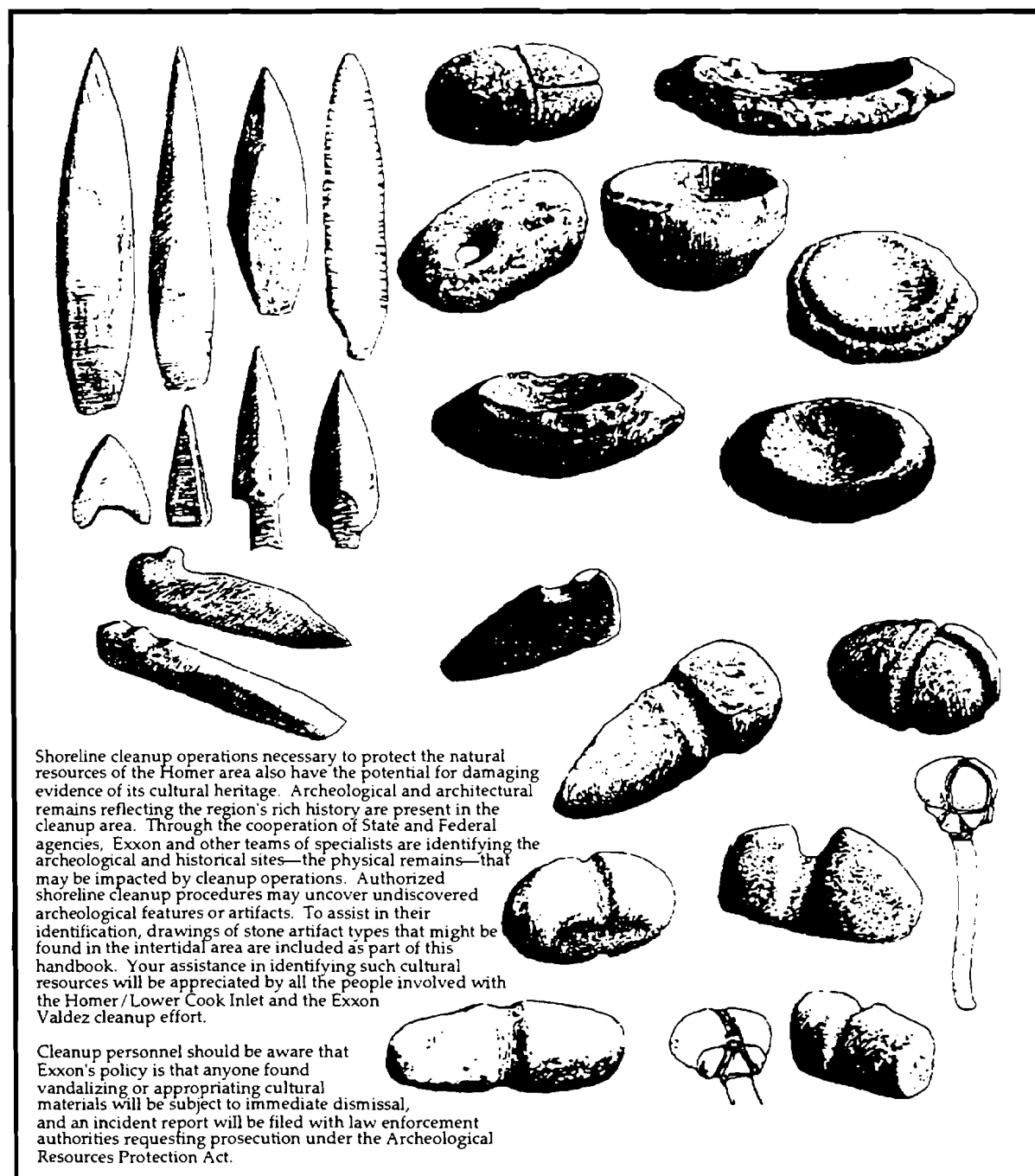


Figure 11.1. Figure from the "Homer/Lower Kenai Peninsula Response Plan" showing common artifact types that workers might encounter during cleanup.

incensed" and that they were weary of the practice of "people dragging these artifacts out and putting them on their mantels."

While incidents of unauthorized site disturbance were relatively few, occasional problems did occur. Perhaps the most vexing of these involved the removal (by a VECO employee) of human skeletal remains which had been discovered in a Knight Island (SEW-469) burial cave. When skeletal parts disturbed by the worker were noticed by an Exxon security officer, he presumed them to be the remains of an unidentified drowning victim. The Alaska State Police were notified, and troopers proceeded to exhume two prehistoric graves from a previously undocumented rockshelter. When a resource assessment team (RAT) functioning in the area learned of the disturbance, it notified the Cultural Resource Program, Chugach Alaska Corporation, and the U.S. Forest Service. Forest Service authorities ordered Exxon and Chugach investigators out of the area, and began their own probe of the event.<sup>45</sup> The original perpetrator, in the meantime, soon surrendered the bones which he had removed to an instructor from the University of Alaska at Anchorage.<sup>46</sup> The remains were ultimately returned to Knight Island, where they now lie buried under an inconspicuous reddish brown cross.<sup>47</sup> The VECO employee who had started the episode was tried (in the U.S. Federal District Court in Anchorage) and assessed both a fine and a period of probation.<sup>48</sup>

About half a dozen other such incidents took place in 1989. The scattered acts of vandalism that took place were often perpetrated by unidentified individuals and generally resulted in substantial investigative costs.<sup>49</sup> It is apparent, however, that there was resolve on Exxon's behalf to protect archaeological resources, evidenced through protective policies, incident investigations, and follow-up taken whenever a violation of company policies was reported.

#### THE CULTURAL RESOURCES PROTECTION WORKING GROUP

Following the 1989 cleanup season the Cultural Resources Protection Working Group (CRPWG) was formed at the behest of AOHA. The office felt there was a continuing need to meet, discuss, and share information since there were fewer opportunities for agency interaction with the completion of the cleanup season.<sup>50</sup> At the first meeting of the group, held on 26 October 1989, it was agreed that the group would continue to meet on a monthly basis.<sup>51</sup>

45. Mobley et al., 138.

46. C. Wohlforth, "\$100 Fine for Sound Grave Robber Brings Criticism From Native Group," *Anchorage Daily News*, 6 Dec. 1989, sec. A. The instructor, David Yesner, implicated the former student stating that "he was enjoying the fact that he knew all these secret sites where he could get stuff in Prince William Sound."

47. Mobley et al., 140. The brown cross, instead of a traditional white marker, was chosen as a means of making the site less conspicuous, and therefore less subject to later disturbance.

48. Wohlforth, 6 Dec. 1989. The fine was considered by some to have been too light, in consideration of the offense. A spokesman for Chugach Alaska Corporation, John Johnson, suggested that the less-than-severe penalty smacked of disregard for the status of Native people.

49. Mobley et al., 133-145. This section of the report describes nearly a dozen cases of vandalism and other problems which required follow-up work by Exxon security, and varied other agencies. Graffiti scrawled on the wall of an abandoned schoolhouse at the old Chenega Village location resulted, for example, in multiple security visits to the scene in an unsuccessful attempt to learn the identity of the guilty parties.

50. Bittner and Holmes, interview, 3 Sept. 1992.

51. Cultural Resources Protection Working Group, "Summary Discussion of the First Meeting of the Valdez Oil Spill Cultural Resources Protection Working Group," 26 Oct. 1989, no. W1882, FOSC Exxon Valdez Archive.



Those present represented Exxon, Chugach Alaska Corporation, the Kodiak Area Native Association, the U.S. Fish and Wildlife Service, the U.S. Coast Guard, the National Park Service, and the U.S. Department of the Interior (regional director's office).<sup>52</sup> Agencies that attended later meetings, sometimes sporadically, included the University of Alaska, the Alaska Fine Arts Museum, the Bureau of Indian Affairs, and Chenega Village Corporation.<sup>53</sup> The Cultural Resources Protection Working Group did not have policy making authority, but served as a forum for discussion of important issues and sharing of information.

The Cultural Resources Protection Working Group predated the organization of the Cultural Technical Advisory Group (CTAG), which later functioned as the FOSC's advisory agency on CRM issues.<sup>54</sup> The CRPWG was instrumental in laying the foundation for successful CTAG functions, in that its forums and activities provided a base for the later group. In most cases the same agencies, often the same persons, formed the backbone of both groups. When a working format was established for CTAG, and as procedures for handling cultural resource issues were put into place, the need for CRPWG diminished.<sup>55</sup> The session held on 27 February 1991, proved to be the final meeting of the group.<sup>56</sup> The CRPWG met infrequently during its one year plus lifetime. According to Judy Bittner, SHPO, it helped bring Native organizations into productive discussions about cultural resources, however.

Natives were initially very reluctant to reveal the locations of burial places and other especially sensitive areas. Archaeologists thus were faced with the difficult task of finding these places themselves. Because Natives mistrusted "outside" archaeologists, they tried at first to function as archaeologists themselves. Meetings of the CRPWG were helpful in resolving such anxieties and providing assurances that the archaeological interest was in protection, not removal and collection.<sup>57</sup>

## 1990—CULTURAL RESOURCE PROTECTION UNDER NEW ORGANIZATIONAL ARRANGEMENTS

With a substantial shoreline cleanup program anticipated for 1990, Exxon planned for a CRM program similar to that of 1989. During the 1989-90 winter months, the CRM program remained active, producing reports, organizing data, and preparing for the next year.<sup>58</sup> When the FOSC announced the formation of Technical Advisory Group (TAG) to expedite shoreline cleanup decision making, CRM personnel also had to make adjustments. Instead of reliance upon SCAT team findings combined with

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52. Ibid.

53. CRPWG, "Summary Discussion of the Meeting of the Valdez Oil Spill Cultural Resources Protection Working Group," sessions 2-7.

54. Specifics about CTAG and its activities will be discussed later in this section.

55. CRPWG, "Summary Discussion of the Seventh Meeting of the Valdez Oil Spill Cultural Resources Protection Working Group," 28 Nov. 1990, no. W1882, FOSC Exxon Valdez Archive. J. Bittner described that latter period of the group's existence stating that "calls to agencies to set up an agenda would result in members reporting that they had nothing to discuss." This was interpreted as an indication that cultural resource matters were proceeding to everyone's satisfaction.

56. BM1 R. Travis, "Cultural Resources Protection Working Group Meeting Summary," 27 Feb. 1991, no. W688, FOSC Exxon Valdez Archive.

57. Bittner and Holmes, interview, 3 Sept. 1992.

58. Mobley et al., 1. The winter staff consisted of a director, an assistant director, a laboratory manager, and laboratory assistants. Winter activities were based in Anchorage.

ISCC/MAC advisory recommendations, the new arrangement depended upon a four-agency advisory group that worked closely with the FOSC.<sup>59</sup> So that protection of cultural resources would not be overlooked, a corresponding group, the Cultural Technical Advisory Group (CTAG) was established.

Cultural Technical Advisory Group membership consisted of representatives of the Chugach Alaska Corporation, the Bureau of Indian Affairs, the U.S. Forest Service, the National Park Service, the U.S. Fish and Wildlife Service, the Alaska Office of History and Archaeology (AOHA), and the U.S. Coast Guard. The Cultural Technical Advisory Group was chaired by the chief, AOHA, who also held the statutory designation as state historic preservation officer (SHPO). The chairperson took all executive actions on behalf of the CTAG, which then also carried the imprimatur of the SHPO. Although not a direct participant in CTAG, the Kodiak Area Native Association provided additional assistance to the group.<sup>60</sup> Section 106 (of the National Historic Preservation Act) collaboration requirements were met by virtue of the CTAG committee makeup.<sup>61</sup>

Technical Advisory Group members met on an almost daily basis to produce cleanup recommendations on a segment-by-segment basis. Technical Advisory Group sessions focused upon the nature of the site, the degree to which it was oiled, ecological factors, and the treatment options that might be most appropriate. Technical Advisory Group recommendations were then passed to CTAG for evaluation of their potential impact on cultural resources. Forty-eight hours were permitted for evaluation and recommendation. Cultural Technical Advisory Group recommendations often included additional constraints imposed for the protection of cultural resources.<sup>62</sup>

#### ACTIVITIES IN THE FIELD—1990

Of the six hundred subdivisions that were projected for cleanup in 1990, a total of 106 were expected to require intensive archaeological surveys. Many additional archaeological sites were discovered in 1990 shoreline surveys, however. A survey of 139 subdivisions (covering 164 miles of shoreline) revealed sixty-two previously unknown sites, of which forty-two were classified as prehistoric, and the remainder of more recent, "historic" vintage. Discoveries in 1990, in the view of the archaeological team, added significantly to the body of knowledge related to prehistoric settlement of the area. Work done on the Kenai Peninsula provided archaeological information on a virtually almost untouched area. Two notable historic discoveries included a World War II military campsite and the wreck of a twentieth century steamship.<sup>63</sup>

When shoreline work crews began cleanup work late in April, three segments were inadvertently treated despite existing archaeological "holds." The premature treatment

59. Haggarty et al., 33.

60. Ibid.

61. C. M. Mobley and J. C. Haggarty, "The Exxon Valdez Cultural Resource Program," 7 Oct. 1989, no. W614, FOSC Exxon Valdez Archive, 2. Section 106 of NHPA stresses the value and importance of consultation between the parties, identification of potential conflicts between the two, and reconciliation of difference through mutual discussion.

62. Haggarty et al., 34.

63. Ibid., 9, 145, and 150–151. Both of these findings were at Smith Island in Prince William Sound.

brought charges of carelessness and lack of attention to instructions.<sup>64</sup> Investigation revealed a combination of late revision of cleanup plans, poor communications, and failure to properly brief shoreline monitors, as contributing causes.<sup>65</sup> Although the incidents resulted in no damage to cultural resources, they served to launch an intensive reeducation program. Exxon staff archaeologists visited and briefed every shoreline work crew during the two days which followed these incidents.<sup>66</sup>

There were far fewer problems with unauthorized or inadvertent site disturbance in 1990 than during the previous year. Since work crews were composed principally of veterans of the 1989 cleanup, they were already well aware of their expected behavior and of the regulations governing artifacts and other archaeological resources. Controversy over cultural resources was also reduced. Exxon's extensive 1989 Cultural Resource Program may have helped convince skeptics that proper attention was being given to historical and archaeological preservation considerations.

### SEC-188: A CASE STUDY

Shoreline segment SEC-188 is located on the Kenai Peninsula near the Pye Islands.<sup>67</sup> Its archaeological significance was discovered on 31 July 1989 by members of a SCAT team making a routine survey of the outer Kenai coast. The abundance of artifacts scattered over a 350-foot segment of the shoreline suggested to the surveyors that they had happened upon an important archaeological find. When representatives of several agencies returned on 11 August 1989, they were further convinced that the setting held an unusual abundance of artifacts.<sup>68</sup> A preliminary conclusion was that the area had probably been a prehistoric seasonal hunting camp.

The shoreline at SEC-188 was also heavily oiled, and regarded as a priority treatment area. Archaeologists were reluctant to encourage cleanup work at SEC-188, at least for the time being, however. Artifacts were thought to be present in the intertidal zone, hidden by oil, and it was feared that they might be destroyed under the feet and equipment of cleanup workers. Bringing a large work crew to the site also increased the risk of cultural items being carried off as souvenirs. It was suggested that three monitors would be needed to protect the well being of artifacts at the site, should a full-fledged cleanup effort be mounted there.<sup>69</sup> Furthermore, a substantial precleanup evaluation would need to be made, probably requiring several days of archaeological team deployment.<sup>70</sup>

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64. C. Wohlforth, "Cleanup Crews Trespass On Archaeological Sites," *Anchorage Daily News*, 18 May 1990. See remarks by Randy Bayliss.

65. J. Korr (FWS), "administratively confidential" report to J. Bittner (SHPO) (investigation into unauthorized cleanup of KN-104 on 4 May 1990, 29 May 1990), no. W1938; and O. Harrison (Exxon), letter to R. B. Thompson (ADEC), 15 May 1990, no. W1912, FOSC Exxon Valdez Archive.

66. Haggarty et al., 152.

67. The specific location of SEC-188 is confidential, to protect it from disturbance.

68. The agencies involved included the National Park Service, Chugach Alaska Corporation, Exxon (archaeologists), and AOH.

69. Three archaeologists present at a single site would have represented an unusually high number, suggesting that the team felt that very intense supervision was warranted in the case of SEC-188. They may also have felt that they did not have the resources to "cover" such an important operation at that time.

70. L. S. Hart (NPS), letter and attachments to C. Mobley (Exxon), 24 Aug. 1989, no. C2632, FOSC Exxon Valdez Archive. Similar cautions were urged by state authorities in another communication: N. Johannsen (SHPO), to Seward Resource MAC members, 17 Aug. 1989, no. C1661, FOSC Exxon Valdez Archive.

With a few days remaining before demobilization (scheduled for 15 September), both Cultural Resource Program archaeologists and SCAT personnel felt that a “no treatment” decision for SEC-188 would best serve the protection of the cultural resources located there. The Seward MAC/RMAC urged, however, that the “beach be treated, but only after appropriate archaeological mitigating measures are taken.”<sup>71</sup> No action was taken.

When survey teams returned to SEC-188 in 1990, they discovered that the winter weather had had little effect on the site. The shoreline remained substantially oiled. A spring shoreline assessment team (SSAT) visit to the area in March (with archaeologist participation) led to a recommendation for cleanup, also approved by TAG. The resulting work order contained several precautionary measures, including very close supervision by archaeologists, inspection of all refuse before bagging, and detailed procedures for tar mat removal and final treatment.<sup>72</sup> Although cultural resources personnel continued to favor a site avoidance option, Kenai Fjords National Park spokespersons also pressed for cleanup due to concern over the amount of oil at the site.<sup>73</sup>

As these work plans were being laid, however, the English Bay Corporation, a Native corporation based at English Bay village, raised vigorous objections to archaeological exploration in the upland areas above the SEC-188 shoreline. Just two hours after archaeological surveys commenced on 25 April, upland surveys were ordered to halt when it was learned that English Bay was seeking a court injunction. Work in the intertidal area continued, and an extensive search of the shoreline revealed 157 artifacts, providing further evidence of significant prehistoric activity.<sup>74</sup>

On 31 July, archaeologists from Exxon, the National Park Service, and the Chugach Alaska Corporation gathered at SEC-188 to make preparations for the arrival of cleanup workers the next day. Treatment boundaries were established, previously identified artifacts were flagged, and briefings were held with members of the work crew. They were briefed on artifact identification, procedures for working with site archaeologists, and on the sensitivity of archaeological issues.<sup>75</sup>

During the ensuing two days of cleanup work by the ten member crew, several additional artifacts were found, including eleven discovered by cleanup workers. As crews completed work at the site, departing on 3 August, cultural resource personnel concentrated on postcleanup assessment. Efforts were made to ensure that artifacts

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71. Comdr. S. A. McCone, letter to G. McCory (Exxon), 28 Aug. 1989, no. C1912, FOSC Exxon Valdez Archive. Commander McCone's letter was to report the sentiments of the Seward MAC/RMAC committees, and it did not necessarily reflect the position of the FOSC.

72. Exxon Valdez Cultural Resource Program, “Work Plan Outline for Oil Spill Cleanup at [SEC-188]/C,” 27 July 1990, no. F272, FOSC Exxon Valdez Archive. Attachment to DOI ARPA permit, 11 June 1991, no. F272, FOSC Exxon Valdez Archive.

73. Betts et al., 43.

74. Ibid., 46 and 50.

75. Ibid., 61.

were left where they were found whenever possible. The English Bay Corporation relented, and survey work was extended to upland areas as well.<sup>76</sup>

On 28–29 August, additional shoreline treatment took place at SEC-188. Once again, training sessions were conducted for workers. Over three tons of oil and oiled refuse were picked up and Customblen granular fertilizer was applied. As before, the work area was divided into grid segments, and carefully monitored for the presence of additional artifacts. Additional findings were few, though two archaeologists were on hand to supervise the six shoreline workers who performed the work. There were protests from Chugach Alaska Corporation, however, that site constraints had not been properly followed during this latest round of work at SEC-188.<sup>77</sup>

The matter did not end there, however. Further work was conducted (in June 1991), largely at the urging of the National Park Service. Reporting that the site had “extremely high resource values already determined to be nationally significant” and “brown bear densities among the highest in the world,” NPS authorities pressed for additional work at SEC-188 to remove a tarmat measuring approximately five meters by five meters.<sup>78</sup> The FOSC was reluctant to support a 1991 cleanup that involved costs estimated to be between \$75,000 and \$100,000, given the small size of the cleanup accomplished.<sup>79</sup>

The National Park Service then proposed use of an NPS contract vessel, as a less costly alternative to accomplishing the SEC-188 cleanup. The project could be completed by the NPS crew for “under \$10,000,” NPS stated.<sup>80</sup> But earlier differences over treatment at SEC-188 appeared to influence Exxon to decline the NPS offer.<sup>81</sup> Exxon dispatched a contract vessel to the area on the day following the year’s final meeting of CTAG, to complete the remaining work at SEC-188.

Disposal of the tarmat required breakup and piece-by-piece removal, and it was necessary to examine the conglomerate material for possible artifacts. Samples were dissolved in a solvent for more precise evaluation. Overall, about 10 percent of the tarmat pieces were examined in this way, and archaeologists concluded that no artifacts were contained in the oily waste being removed from the shoreline. Nearly eight hundred pounds of material were removed in a four-hour operation.<sup>82</sup> When operations were ended on 11 June 1991, it was also finally the end of FOSC activity at SEC-188.

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76. *Ibid.*, 59. Upland site investigations were conducted beginning 31 July 1990. The team consisted of Exxon archaeologists Betts and Crowell, along with Schaff (NPS) and Johnson (Chugach Alaska Corporation).

77. L. L. Johnson (Chugach Alaska Corporation), letter to J. Haggarty (Exxon), 27 Aug. 1990, no. W1398, FOSC Exxon Valdez Archive. L. L. Johnson contended that the Chugach Alaska Corporation had been led to believe that treatment would involve only bioremediation, but that manual cleanup had also been employed at the site.

78. D. Hansen (NPS), letter to Comdr. E. Page, 6 June 1991, no. F264, FOSC Exxon Valdez Archive. At a 3 June meeting of CTAG, a NPS spokesperson (Gleason) suggested that CTAG had failed to consider the wishes of the Kenai Fjords National Park superintendent in making a “no treatment required” recommendation for SEC-188.

79. Comdr. E. Page, letter to P. Gates (DOI), 5 June 1991, no. F255, FOSC Exxon Valdez Archive.

80. BM1 R. Travis, “CTAG Meeting Summary,” 3 June 1991, no. F687, FOSC Exxon Valdez Archive.

81. Specifically, Exxon’s Haggarty charged that the issue could have been avoided had NPS personnel agreed with an Exxon suggestion that the tarmat be removed during a survey visit that had taken place earlier. Terse words about the matter were exchanged between Exxon and NPS personnel at the 3 June meeting of CTAG.

82. Betts et al., 78.

Segment SEC-188 was by no means a typical segment, but it offers an illustration of the complexities that developed when cultural considerations became prominent in the cleanup. As events unfolded, archaeologists representing several agencies and Native interests became involved. Native groups were concerned enough about what the cleanup might do to important artifacts on their lands to go to the courts. The National Park Service's assertions that the area's unique resource values demanded a particularly high level of cleanup was the final ingredient in this collision of interests over which the FOSC had little control. When cleanup work did take place, it had to be performed with extreme care, making it extremely expensive as well.

## 1991 AND 1992

The frequency of CTAG meetings diminished in 1991. At a February meeting it was suggested (by one of Exxon's archaeologists) that field procedures established in 1990 might simply be continued, and that fewer CTAG meetings would be needed.<sup>83</sup> Indeed only a few sessions were held. It was determined in May that:

Any subdivision which had an archaeological constraint last year [1990] will have the identical constraint attached this year [1991], and be sent to SHPO for signature after TAG. If there is any change in treatment level or there is a determination of increased archaeological interest then the segment would be processed through CTAG for any determination of increased archaeological constraint.<sup>84</sup>

This simplified procedure appeared to work effectively. It was understood that CTAG meetings could be called on twenty-four-hour notice if some significant problem developed. The only major discussion point during 1991 was the continuation of the MR-001A issue, which occupied a substantial amount of agenda time during June meetings.<sup>85</sup>

During the limited cleanup and survey operations that took place in 1992, there were no contentious issues involving cultural resources. The Cultural Technical Advisory Group did not meet. The FOSC directed the two Coast Guard operations officers, who served as field representatives, to deal with any cultural resource matters that might arise through application of previously employed procedures.<sup>86</sup> Since 1992 operations consisted of re-visiting familiar areas, it was not necessary to conduct new site evaluations before permitting work to commence. Exxon maintained its archaeological staff, in compliance with permit requirements.

## SUMMARY

The FOSC did not have a direct role in cultural resource protection issues. At meetings where the Cultural Resources Protection Working Group or the Cultural Technical

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83. Travis, "Cultural Resources Protection Working Group Meeting Summary," 27 Feb. 1991.

84. BM1 R. Travis, "CTAG Meeting Summary," 10 May 1991, no. F511, FOSC Exxon Valdez Archive. The quoted material is from an attached CTAG policy statement.

85. The discussion to do with SEC-188 dominated the meetings held on 3 June and 10 June. Much of the group's attention otherwise focused on progress reports and discussion of what was being contemplated by the various agencies.

86. Lt. Comdr. J. Madden, interview by Lt. Comdr. R. Gaunt, Anchorage, 22 Sept. 1992, no. F664, tape, FOSC Exxon Valdez Archive. Lt. Comdr. J. Madden and Lt. I. Nance, were the two operations officers who served in 1992 field operations.

Advisory Group discussed archaeological issues, the FOSC was represented by an emissary. The Coast Guard representative at those sessions was instructed simply to listen and report about committee activities and decisions. The primary goal was one of ensuring that Native Alaskan concerns were respected and complied with to the extent possible, while ensuring the cleanup could progress without unanticipated surprises generated by matters related to cultural resources.<sup>87</sup>

In a later evaluation of the Coast Guard's role in helping to protect cultural resources in the response area, AOHA personnel suggested several improvements that might have been made. One observation echoed a familiar theme that has appeared elsewhere in this report. The rapid turnover of Coast Guard shoreline monitors in 1989 meant that it was necessary to reprogram new personnel on a too frequent basis. Archaeologists faced two challenges when helping to orient Coast Guard shoreline monitors. First, it was necessary to instill knowledge of the archaeological basics, so that the monitor could recognize the artifacts that might be encountered. Second, it was necessary to ensure that the monitor accepted the importance of protecting cultural resources. Too often, however, just as archaeological staff had begun to feel comfortable that Coast Guard monitors had become properly sensitized to archaeological considerations, it would be time for the next rotation.<sup>88</sup>

The AOHA leaders also felt that the Coast Guard *generally* lacked expertise in the cultural resource area. Those involved in the *Exxon Valdez* response cultural resource program, appear to share a conviction that the Coast Guard needs its own archaeological expertise.<sup>89</sup> Among the evidence cited were: (a) lack of Coast Guard expertise placed pressures upon other federal agencies who were already spread thin in the response effort; (b) the lack of federal archaeological personnel shifted a greater share of the cultural resources workload to the remaining agencies, including AOHA; and (c) a knowledgeable *actual member* of the Coast Guard would have had greater credibility with other Coast Guard personnel, and would thus have more effectively communicated the message of the importance of cultural resource protection. As one source put it, if the Coast Guard is to be the lead agency in spill responses, no matter where they occur, then it should have its own archaeological personnel.<sup>90</sup>

The Coast Guard's unfamiliarity with cultural resource issues may also help explain the extended period of time that proved necessary to negotiate the basic MOA on archaeological concerns. On the other hand, the FOSC was viewed as having been

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87. The 1990 CTAG representative was Capt. R. Doherty, and in 1991, BM1 R. Travis served as the FOSC's member of the group. The role of the USCG representative was described by BM1 Travis (BM1 R. Travis, conversation with Lt. Comdr. R. Gaunt, Anchorage, 20 Oct. 1992, no. F719, notes, FOSC Exxon Valdez Archive). The goals of the FOSC were described in written review comments by Rear Adm. D. Ciancaglini on an earlier draft of this report, 10 Dec. 1992, no. F783, FOSC Exxon Valdez Archive.

88. Bittner and Holmes, interview, 3 Sept. 1992.

89. These themes, and those that immediately follow, were encountered in the Bittner/Holmes interview (3 Sept. 1992), the Shaw interview (15 Sept. 1992), and the Mattson interview (23 Sept. 1992).

90. J. Mattson felt that the Coast Guard should have a qualified cultural resource person within its ranks because it too is a land manager. He pointed out that the Coast Guard has lighthouses, installations, buildings, and sites of its own, which should be nominated for inclusion in the National Register of Historic Places. An in-house archaeologist could, in his view, fill that role in addition to serving the FOSC in spill response.

sensitive to archaeological concerns, and his sensitivity to Native concerns was regarded, by SHPO, as having been particularly commendable.<sup>91</sup>

Archaeological issues did not often directly delay cleanup operations. There were scattered instances, particularly in the earliest days of the response, where work could not commence until an archaeologist arrived. When an artifact was unexpectedly found, the procedure was normally to protect the immediate vicinity of the find, while work continued nearby. Generally, there were few interruptions of work, nor were prolonged delays a serious deterrent to cleanup operations. Likewise, despite there being cultural resource issues which generated controversy, especially during the first twelve months of the response, the professional archaeologists and anthropologists who represented the agencies active in cultural resource protection generally functioned in a climate of cooperation and mutual respect.<sup>92</sup>

Despite the many shortcomings in the Coast Guard's preparedness to deal with cultural resource issues discussed in this chapter, members of the archaeological community generally gave high marks to the overall Coast Guard effort. Although Coast Guard personnel lacked archaeological expertise, they were nonetheless commended for being faithful to their responsibility to do "what they *thought* was best" for cultural resource protection.<sup>93</sup>

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91. Bittner and Holmes, interview, 3 Sept. 1992.

92. Ibid.

93. Mattson, interview, 23 Sept. 1992.





## CHAPTER 12. OTHER SHORELINE CLEANUP ISSUES

### OVERVIEW

This chapter examines several issues already touched upon in earlier chapters. The impacts of natural resource constraints on the shoreline cleanup are explored through a discussion of the effects the widespread presence of anadromous fish streams in the response area had on both the timing and nature of cleanup operations in their vicinity. Anadromous stream cleanups were further complicated by the frequent presence of bald eagle nests nearby. In a somewhat different vein, the state's rigid policy on prohibiting the sale of fish which might be perceived as being tainted by oil contamination had unintended effects that complicated or constrained the shoreline cleanup in many areas.

The roles played by intrusive cleanup technologies in the response are explored in discussions of "rock washing" and storm berm relocation. Efforts to develop a large-scale rock washing capability engendered considerable debate during 1990, coming to rely heavily on a "net environmental benefits analysis" conducted under sponsorship by the National Oceanic and Atmospheric Administration (NOAA). Storm berm relocation was used extensively in conjunction with bioremediation in both 1990 and 1991. But the storm berm relocation project proposed for Ushagat Island (in the Barren Islands, southwest of the Kenai Peninsula) proved to be one of the most fractious disputes of the entire shoreline cleanup effort.

Lastly, the difficulties of coordinating scientific studies around a major oil spill response are explored. Attempts to "set aside" a number of sites for the purpose of scientific study were complicated by both bureaucratic considerations and the built-in difficulties of sequencing proliferating scientific studies and cleanup work in a way that worked to the mutual benefit of both.

### ANADROMOUS FISH STREAMS

Despite efforts to install protective booming, many anadromous fish streams were impacted by oil washing ashore. In April 1989 the Alaska Department of Fish and Game (ADF&G) conducted an anadromous stream survey in Prince William Sound and on the Kenai Peninsula. They inventoried 464 streams, 100 of which were found to be oiled (87 in Prince William Sound). The Alaska Department of Fish and Game reported that 171 such streams which had not previously been documented were found.<sup>1</sup> The efforts to protect these streams focused on those that were especially significant to the salmon fishery, but many important streams became contaminated nonetheless. Streams of all sizes, configurations, and degrees of importance to salmon

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1. K. Middleton et al., "Alaska Department of Fish and Game Exxon Valdez Oil Spill Response Operations Report-Habitat Division 1989-1992" (prepared by Habitat Division of ADF&G, June 1992), 7-8.

fisheries were affected, and each required special consideration as the shoreline cleanup proceeded.

The basic problem was that, at the time the spill occurred, out-migrating salmon fry were already passing through many of these streams, often congregating at their mouths where the greatest oil contamination lay. Many pink salmon spawn directly in the intertidal areas which were most likely to become contaminated. While the oil itself likely posed a threat to these fish, the disturbance involved in a cleanup was also at issue. The earliest solution to this problem, part of the 7 April 1989 "Shoreline Cleanup Priority Assessment Guidelines," was simply to avoid any cleanup until the fry had finished their out-migration, about 1 May. Then the aim was to complete whatever cleanup was to be done by 1 July, when adult fish would be returning.<sup>2</sup>

By June, ADF&G and Exxon had jointly established priorities for stream bed cleanups among affected streams. Of thirty streams considered, eleven were selected for "highest priority." Of these, seven saw major cleanup operations in 1989, while an additional twenty received "limited" treatments. The most common method of stream treatment was manual removal, but high pressure omni-booms, hot-water flushing, cold-water deluge, and bioremediation were also utilized.<sup>3</sup>

The selection of cleanup techniques for anadromous streams, while in principle open to an array of choices, was subject to ADF&G approval, and ecological constraints were included in work orders processed by the Interagency Shoreline Cleanup Committee (ISCC). Cleaning required an ADF&G fish habitat permit.<sup>4</sup> By 1990, the working rules had been refined to the point where they had become a standardized part of the shoreline cleanup work order development system.<sup>5</sup> The flushing of beaches into stream drainages was prohibited, and the bioremediation compound Inipol could not enter the stream flow. Any stream bed or bank disturbance, use of bioremediation or chemicals within 100 meters of a stream, or treatment prior to 1 July that might increase nearshore oil or toxicity levels (e.g., Inipol bioremediation or hot-water washing) required specific authorization from ADF&G.<sup>6</sup>

Anadromous stream cleanup, which competed with many other high priority efforts in 1989, received more concerted attention in 1990.<sup>7</sup> Spring shoreline assessment team (SSAT) surveys were conducted in late April, providing information on what the effects of natural cleansing during the winter of 1989–90 had been. During February

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2. RRT, "Shoreline Cleanup Priority Assessment Guidelines," 7 Apr. 1989, no. C2080, FOSC Exxon Valdez Archive.

3. Middleton et al., 7–8.

4. L. Glenn (ADF&G), letter to Comdr. W. Griswold, 20 July 1989, no. C2130, FOSC Exxon Valdez Archive. A general permit was issued under Title 16 (Alaska Statutes 16.05.870 d) (M. Sigman [ADF&G], letter to J. Michel, 30 June 1989, no. C758, FOSC Exxon Valdez Archive).

5. Prince William Sound, Seward, and Homer ecological constraints. This form listed alphanumeric codes for work order planners to use in defining the constraints that applied to particular subdivision cleanups. Once defined, they had to be approved by monitors representing each of the TAG agencies before transmission to the FOSC.

6. Ibid. By 1990 the constraints imposed by ADF&G were less arduous in practice than they might appear, or than they appear to have been in 1989. For example, when the window was "open" for treatment, bioremediation could be applied up the edge of the stream bank when approved (J. A. Morrison [ADF&G], letter to T. Kelley [Exxon Co., USA], 23 May 1990, no. W1913, FOSC Exxon Valdez Archive).

7. M. Kuwada (ADF&G), conversation record with Lt. Comdr. R. Gaunt, 1 Mar. 1993, no. F761, FOSC Exxon Valdez Archive.

planning meetings for the SSAT surveys, it was decided that one of the twenty shoreline cleanup assessment teams (SCATs) to be deployed would specialize on anadromous streams.<sup>8</sup> This ANAD SCAT (later expanded to two teams) had ADF&G representatives on it. Anadromous stream mouths were among “priority 1” areas for the surveys, due to their time-sensitive environmental constraints.<sup>9</sup>

The 1990 survey found fewer heavily oiled streams (in part because of refinements in the classification procedures used). The number of heavily oiled streams dropped from 28 to 16, and those classified as “moderately” oiled fell from 20 to 17. The overall classification of streams as oiled dropped by about 30 percent (from 173 to 121). The higher concentrations of heavily oiled streams (23 percent of the total) were, not surprisingly, found in Prince William Sound. Just 8 percent (4 of 48) of oiled Gulf of Alaska streams were considered “heavily” oiled at the onset of 1990 operations.<sup>10</sup>

Work performed in 1990 included treatment of forty-eight Prince William Sound streams and lesser numbers in western Alaska. Manual pickup was the primary cleanup approach, though five of the worst oiled Prince William Sound streams saw mechanical tilling and/or bank replacement. Bioremediation was employed at seventeen of the Prince William Sound locations.<sup>11</sup>

The actual conduct of the 1990 anadromous stream cleanup proved to be a “bumpier” road than might be supposed from the seeming harmonious coordination of anadromous stream survey work with other SSAT elements in the spring. The switchover from the ISCC format to the Technical Advisory Group (TAG) meant that ADF&G now had to rely on Alaska Department of Environmental Conservation (ADEC) to represent its interests at TAG meetings. ADF&G felt disenfranchised by this arrangement however, as ADEC was seen by ADF&G (and other state resource agencies) to be taking an increasingly independent path.<sup>12</sup>

The ANAD SCAT surveys had produced a set of work orders separate from those generated by SCAT surveys, but these frequently failed to “catch up” in time to affect the work done on subdivisions containing anadromous streams. Shoreline representatives of the TAG agencies, including the ADEC monitors, were often unaware of the existence of such special orders, and refused to delay or modify the work to suit ADF&G observers.<sup>13</sup> Alaska Department of Fish and Game personnel came to feel that other agency representatives with whom they interacted on the shorelines were, at best, insensitive to the resource protection mandate they had, and at worst, openly hostile to it.<sup>14</sup>

8. TAG, “Spring Shoreline Assessment Program,” no. W783, FOSC Exxon Valdez Archive.

9. Exxon, “Exxon Valdez 1990 Spring Shoreline Assessment Team (SSAT) Program Overview,” 20 Mar. 1990, no. W489, FOSC Exxon Valdez Archive.

10. Middleton et al., 42.

11. Middleton et al., 11 and 27.

12. M. Kuwada (ADF&G), interview by Lt. Comdr. R. Gaunt, Dr. T. Leschine (FOSC staff), and A. van Emmerik (FOSC staff), Anchorage, 27 May 1992, no. F675, tape; E. Piper (ADEC), conversation record with Lt. Comdr. R. Gaunt, 3 Mar. 1993, no. F763; and J. Morrison (ADF&G), memorandum to M. Kuwada, 11 Sept. 1990, no. W1967, FOSC Exxon Valdez Archive.

13. Morrison, memorandum to Kuwada, 11 Sept. 1990.

14. Ibid.

The problem had ramifications for ADF&G that went well beyond what was happening in the field *per se*, as the agency came to feel that Exxon, NOAA, and the Federal On Scene Coordinator (FOSC) were presenting a united front against the more intrusive forms of cleanup it advocated. The Alaska Department of Fish and Game believed it was necessary to remove through excavation subsurface oil from stream beds and banks where, in its view, it posed a long-term threat to fishery resources.<sup>15</sup> The state had formed its own version of TAG (referred to as STAG), but TAG could overrule STAG, and ADF&G apparently had trouble getting the ADEC representative to both groups to take its positions to TAG meetings.<sup>16</sup> The Alaska Department of Fish and Game also opposed the increasing reliance in the cleanup on bioremediation and other less-intrusive forms of cleanup.

The target for completion of the 1990 anadromous stream cleanup was 10 July. On 12 June an ADF&G spokesman reminded the FOSC that "there are less than thirty days to accomplish ANAD SCAT cleanup objectives in all affected streams."<sup>17</sup> The pace of work was accelerated somewhat when setback requirements were provisionally reduced from 100 to 50 feet.<sup>18</sup> When 10 July came, anadromous stream operations were complete.<sup>19</sup> Seventy streams had been treated.

Anadromous streams became an issue again briefly in August of 1991, when, on 9 August, ADF&G representatives released the results of their own surveys of the condition of fifteen anadromous fish streams in Prince William Sound.<sup>20</sup> The memorandum recommended additional treatment for several of the streams, including in some cases mechanical tilling. The idea of bringing in mechanical equipment to do the work was quickly ruled out by TAG as being too costly and logistically difficult. Accordingly, the state reduced its list to four "high priority" streams, three on Knight Island and one on Latouche.<sup>21</sup> The rest would be recommended for reassessment in 1992. A special meeting of state, Exxon, and Coast Guard officials was held to discuss the matter, and TAG arranged to pay a visit to the four remaining subdivisions on 26 August.<sup>22</sup> Otto Harrison resisted the idea of any more treatment in the vicinity of the four streams, but was willing to participate in the on-site inspection.<sup>23</sup>

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15. Morrison, memorandum to Kuwada, 11 Sept. 1990; and Kuwada interview, 27 May 1992.

16. Morrison, memorandum to Kuwada, 11 Sept. 1990.

17. L. Trasky (ADF&G), letter to Rear Adm. D. E. Ciancaglini, 12 June 1990, no. W1333, FOSC Exxon Valdez Archive. Mr. Trasky was concerned about the ANAD SCAT work orders that had not caught up with the SSAT orders for the same subdivisions, but another problem was that the presence of eagle nests in the vicinity of several of the streams had been delaying work as well, an example of how multiple environmental constraints sometimes competed with one another (Rear Adm. Ciancaglini, letter to L. Trasky, 25 June 1990, no. W1334, FOSC Exxon Valdez Archive).

18. Comdr. D. D. Rome, memorandum to FOSC chief of staff, 5 July 1990, no. W1550, FOSC Exxon Valdez Archive. Comdr. Rome reported, "Mark Kuwada had agreed with this approach," and also that the remaining (outer fifty feet) could be completed later—probably by 15 July.

19. Rear Adm. D. E. Ciancaglini, letter to all cleanup personnel, 10 July 1990, no. W1571, FOSC Exxon Valdez Archive. The FOSC proclaimed the anadromous stream cleanup to be successfully completed, and enthusiastically thanked those who were responsible.

20. M. Kuwada (ADF&G), memorandum to E. Piper (ADEC), 9 Aug. 1991, no. F76, FOSC Exxon Valdez Archive.

21. J. Bauer (ADEC), letter to Comdr. D. Maguire, 15 Aug. 1991, no. F72, FOSC Exxon Valdez Archive.

22. Comdr. D. Maguire, letter to O. Harrison (Exxon), 15 Aug. 1991, no. F73, FOSC Exxon Valdez Archive. Tides dictated a change in schedule from the date proposed in the letter.

23. O. Harrison (Exxon), letter to Comdr. D. Maguire, 19 Aug. 1991, no. F74, FOSC Exxon Valdez Archive.

The Technical Advisory Group was able to visit three of the sites on the appointed day, and the party broke out the shovels itself to perform the manual treatment they felt was warranted at two of them. The third was seen as requiring more work than could be done on the visit, and it was referred to the still-active *Don Bollinger* bioremediation team for a late cleanup.<sup>24</sup> These were the last sites expected to require cleanup in 1991, and the whole episode was interpreted as indicative of a spirit of mutual cooperation finally having been achieved.<sup>25</sup>

#### CONFLICT BETWEEN EAGLE NEST AND ANADROMOUS STREAM CONSTRAINTS

Getting to the 10 July completion date had been complicated by a number of factors, one of which was the presence of nesting bald eagles. Salmon is a primary food source for eagles, which tend to nest in the immediate vicinity of anadromous streams. Eagles are also relatively intolerant of disturbance while nesting, and may abandon the nest. As a result, the U.S. Fish and Wildlife Service (FWS) had imposed four hundred meter exclusion zones around active eagle nests, and one-half mile exclusion areas for aircraft overflights (figure 12.1).<sup>26</sup>

Alaska Department of Fish and Game personnel saw these constraints as impediments to completing the anadromous stream cleanup before the stream window was closed, however, as the general constraint on eagle nests extended through the month of May, and many birds in Prince William Sound were still present on their nests in early June when the anadromous stream cleanup window "opened."<sup>27</sup> The Alaska Department of Fish and Game apparently had trouble convincing FWS biologists of the urgency with which this conflict needed to be resolved, and further delays were occasioned by the special anadromous stream work orders not being in hand once FWS was ready to start sequencing stream cleanups. As a result, according to ADF&G's John Morrison, there were twenty-one streams yet to be cleaned with just eight days remaining in the "window," necessitating a number of compensating "shortcuts" in the rush to finish.<sup>28</sup>

From Exxon's point of view, ADF&G's imposition of environmental constraints had severely limited its ability to clean anadromous streams.<sup>29</sup> The Alaska Department of Fish and Game's Mark Kuwada argued however that the available windows for cleanup were clear, and Exxon had failed to respond quickly enough in its planning to permit the cleanups to take fullest advantage of the time that was available.<sup>30</sup> Exxon felt that the many other rules on what techniques could and could not be used in the vicinity of anadromous streams inhibited their cleanup. The Alaska Department of Fish and Game pointed out that its field monitors were available to negotiate the application of constraints on a case-by-case basis.<sup>31</sup> Rear Admiral David Ciancaglini

24. Comdr. D. Maguire, memorandum to Rear Adm. D. E. Ciancaglini, 27 Aug. 1991, no. F95, FOSC Exxon Valdez Archive.

25. Comdr. D. Maguire, letter to E. Piper (ADEC), 28 Aug. 1991, no. F94, FOSC Exxon Valdez Archive.

26. Exxon, "1990 General Plan, March Planning Document," 15 Mar. 1990, no. W477, FOSC Exxon Valdez Archive.

27. Morrison, memorandum to Kuwada, 11 Sept. 1990.

28. Ibid.

29. Exxon, "1990 Work Program Status and 1990-91 Winter/Spring Program," 1 Sept. 1990, no. W1047, FOSC Exxon Valdez Archive.

30. M. Kuwada (ADF&G), letter to Rear Adm. D. E. Ciancaglini, 23 Oct. 1990, no. F028, FOSC Exxon Valdez Archive.

31. Ibid.

agreed that the relationship between Exxon and ADF&G had been fraught with communication problems.<sup>32</sup>

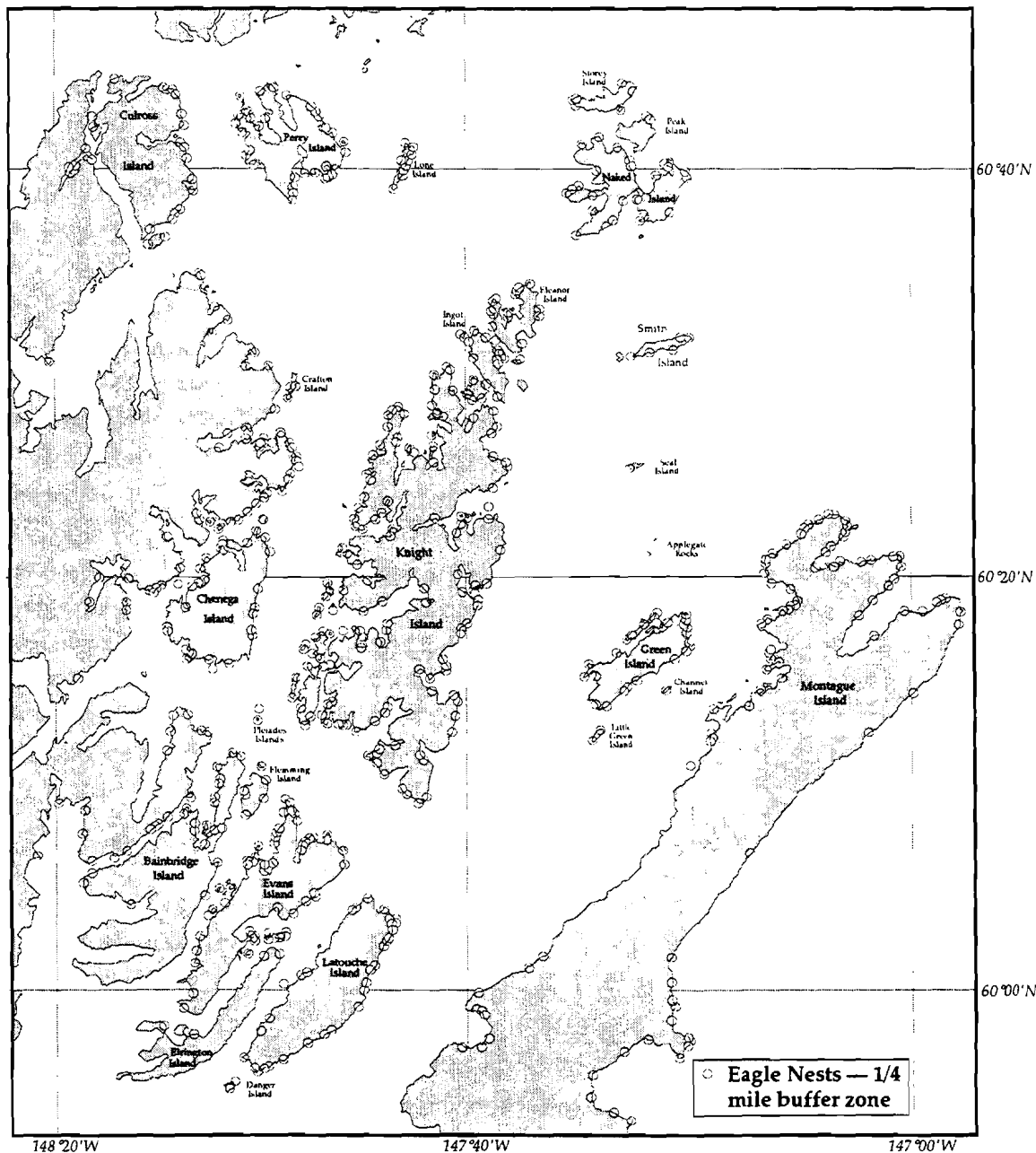


Figure 12.1. Approximate buffer zones surrounding eagle nests in Prince William Sound.

Source: Reproduced from Exxon map distributed during 1991 cleanup.

#### ANADROMOUS STREAM CLEANUP AFTER 1990

In 1991, the number of anadromous streams still in need of treatment declined to fifty-five. Just two, both in Prince William Sound, remained in the “heavily oiled” category.

32. Rear Adm. D. E. Ciancaglini, letter to M. Kuwada (ADF&G), 9 Nov. 1990, no. F027, FOSC Exxon Valdez Archive.

Conditions had improved sufficiently in the Kodiak sector that no stream surveys were conducted there in 1991. Manual removal continued to be the primary cleanup method, though mechanical tilling was also used in scattered areas, all in Prince William Sound. Application of the bioremediation agent Customblen became a standard procedure.<sup>33</sup>

The state now operated its own cleanup vessel. This appeared to diminish conflicts with federal authorities and Exxon, as the state now had the latitude to conduct some of the cleanups it felt were necessary on its own.<sup>34</sup>

In 1992, the final year of cleanup operations, stream bed cleanups were very limited. State authorities visited eight streams (seven in Prince William Sound and one in the Kodiak region) to make a final assessment of stream bed conditions. A small amount of work was conducted at one Knight Island site during Final Shoreline Assessment Program (FINSAP) surveys, and two others were recommended (by state habitat personnel) for additional attention. No further work was completed, however, and the cleanup was declared to be over on 5 June, as FINSAP teams completed their work in the field.<sup>35</sup>

State fisheries researchers believed that hatchery released salmon fared better following the spill than did those spawned in natural areas.<sup>36</sup> Juvenile salmon taken by researchers from contaminated areas reportedly contained measurable amounts of oil-contamination. A three-year study of ten oiled and fifteen unoiled Prince William Sound streams suggested that salmon egg mortality was much higher in the oiled streams. Moreover, the ingestion of oil by juvenile salmon was reported to have retarded their growth rates.<sup>37</sup>

#### EFFECTS OF THE STATE'S "ZERO TOLERANCE" POLICY ON THE SHORELINE CLEANUP

While efforts to protect the Sawmill Bay fish hatchery in the early days of the response had been successful, by July 1989 there were many heavily oiled areas in its vicinity which had not yet received much attention by shoreline cleanup crews. In order to protect the terminal fisheries at Sawmill Bay and other Prince William Sound hatcheries, the decision had been made to "close" the cleanup windows in the vicinities of these hatcheries between 15 July and 1 September when adult salmon would be returning.<sup>38</sup>

33. Middleton et al., 13.

34. Comdr. E. Page, telephone discussion with Lt. Comdr. R. Gaunt, 9 Mar. 1993, no. F764, FOSC Exxon Valdez Archive.

35. Middleton et al., 14.

36. B. Bue et al., "Pinks In Peril: Declining Wild Stocks in Prince William Sound," *Alaska's Wildlife* 25 (January / February 1993): 35. Hatchery releases normally contribute the great bulk of pink salmon runs in Prince William Sound, and were estimated to have accounted for more than 85 percent of the record runs which occurred in 1990 and 1991.

37. Ibid. Exxon scientists strongly disputed these findings in a report presented at a 1993 conference on effects of the spill, held in Atlanta, Georgia (E. J. Brannon et al., "An assessment of Oil Spill Effects on Pink Salmon Populations Following the Exxon Valdez Oil Spill - Part 1: Early Life History" [manuscript for presentation at the third ASTM Symposium on Environmental Toxicology and Risk Assessment, 25 April 1993], no. F841, FOSC Exxon Valdez Archive).

38. A. Teal (Exxon), memorandum to Comdr. B. Fels, no. C1227, FOSC Exxon Valdez Archive. Terminal fisheries are keyed on the adults that return to the vicinities of the hatcheries at which they were released.



The concern was that treatment of nearby shorelines could release sheens which might either float directly into the hatchery area or contaminate vessels which would then carry the contamination into the fishing grounds. Even trace contamination by oil sheens was regarded as a threat by local fishermen, because the state's strict "zero tolerance" policy on fish catches could conceivably render the entire potential catch, projected at about seven million pink salmon in this case, unsaleable.<sup>39</sup>

An additional complication was that many of the most contaminated shorelines near Sawmill Bay were on lands used by Chenega residents for subsistence, and they wanted these lands cleaned by mid-August when subsistence hunting traditionally started (figure 12.2).<sup>40</sup> The ISCC discussed this conflict extensively at its 12 July meeting, but was unable to come to resolution. Prince William Sound assistant OSC Bill Fells subsequently recommended a compromise plan, developed by Exxon, which would push the window back until 22 July and concentrate cleanup on the highest use subsistence areas during the time that was available.<sup>41</sup> The Cordova District Fishermen United (CDFU) resisted extending the windows in the vicinity of the Sawmill Bay hatchery, however,<sup>42</sup> and the matter remained at an impasse.

The FOSC asked the ISCC to take the question up again on 2 August, this time in relation to proposals to treat heavily oiled shorelines on Latouche and southeast Knight Islands. At the meeting, the Chenega Village Corporation representative expressed the view that the cleanup done in these areas prior to 15 July had been inadequate to permit subsistence hunting to go forward. An additional concern was that the areas under consideration at the meeting, if not treated now, might not be treated at all prior to the September demobilization. The Cordova District Fishermen United continued to resist any treatment that could affect the Sawmill Bay terminal fishery until after 26 August, when the peak of the run would be past.<sup>43</sup>

The committee's majority recommendation was that treatment could go forward under very close supervision and special conditions, but should occur *only* if failure to treat the shorelines in question now would preclude their being treated later in the season. The Cordova District Fishermen United did not concur.<sup>44</sup>

Similar concerns came up two days later, when the ISCC met to consider cleanup operations proposed for Perry and Lone islands, north of the areas discussed at the previous meeting, but bearing a similar relationship to other fisheries. Exxon had resumed operations in these areas after a 15 July cessation, out of concern that they would not otherwise be treated before 15 September. Cleanup crews had been instructed that the prevention of sheening was the highest priority.<sup>45</sup> The majority opinion of the ISCC was that the cleanup should go forward under tight controls. The

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39. "Zero tolerance" is discussed further in chapter 18, "Community Concerns."

40. Teal, memorandum to Fels, no. C1227. Chenega residents had requested cleanup of a number of areas on Evans, Latouche and Montague islands in the zone of influence on Sawmill Bay. One area was LA-20 (Sleepy Bay), discussed below.

41. AOSC (PWS), memorandum to FOSC, 13 July 1989, no. C920, FOSC Exxon Valdez Archive.

42. J. Buller (CDFU), letter to S. Christopherson (ISCC), 1 Aug. 1989, no. C1411, FOSC Exxon Valdez Archive.

43. S. Christopherson (ISCC), memorandum to FOSC, 3 Aug. 1989, no. C2619, FOSC Exxon Valdez Archive.

44. Ibid.

45. Interagency Shoreline Cleanup Committee, memorandum to FOSC, 4 Aug. 1989, no. C1373, FOSC Exxon Valdez Archive.

CDFU and the Prince William Sound Seiners Association dissented, again out of concern for possible effects on the fishery.

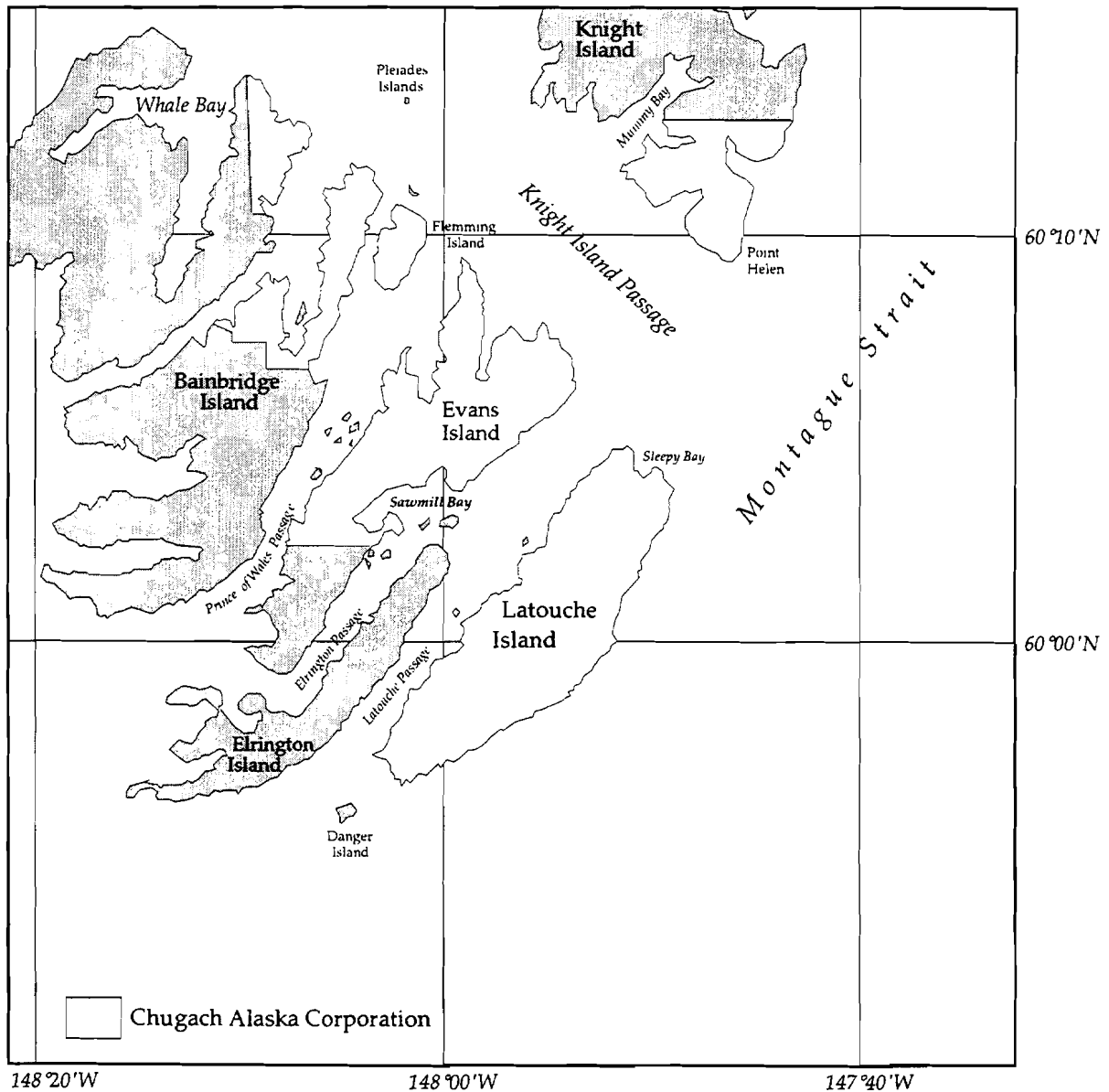


Figure 12.2. Shorelines near Sawmill Bay managed by Chugach Alaska Corporation (Chenega Bay area).

Source: Chugach Alaska Corporation, map of Native corporation land holdings, Oct. 1988.

The FOSC recommended that treatment go forward on Perry and Lone islands and on the contested segments on Latouche and southeast Knight islands.<sup>46</sup> He urged that utmost caution be taken to avoid the generation of, and where necessary, to capture sheens, requiring triple booming of shoreline segments while under treatment. His concern in each case was that otherwise treatment would not likely occur before the

46. Vice Adm. C. E. Robbins, letters to O. Harrison (Exxon), 5 Aug. 1989, no. C1373; and 6 Aug. 1989, no. C1409, FOSC Exxon Valdez Archive.

end of the season. It does not appear that the treatments that took place affected harvests in the terminal fisheries. But the presence of the Sawmill Bay hatchery and the very productive fishery it supported meant that still other heavily oiled segments in the vicinity did not receive sufficient treatment, because cleanup crews had not had the opportunity to concentrate their efforts on these shorelines before the treatment window closed on 15 July.<sup>47</sup>

### THE ROCK WASHER AND NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

Attempts to develop and deploy for the 1990 cleanup the so-called “rock washer,” a mechanical washing device in which excavated oily sediments could be tumbled and washed, unfolded during the spring and summer months of 1990. These became the testing ground for whether Exxon’s adherence to “net environmental benefit” as the guiding principle for the 1990 cleanup could be merged with the state’s desires to have available an efficient technology for doing highly intrusive cleanups where warranted.

The apparatus that was envisioned was a substantial device, which would be barge-mounted and employ conveyor belts to move sediments through it for processing. As later described in the rock washer project’s principal report, the supporting beach operations would have required a crane with a ten to sixty ton capacity, a front-end loader with a five yard bucket, a bulldozer, one or more back-hoes with four to five yard buckets, and a twenty plus person processing/excavation crew.<sup>48</sup> The rock washer never came to fruition as an operational technology (figure 12.3).

Led by ADEC, the state had begun exploring rock washing technologies as early as September of 1989. A state review panel selected a system from among designs submitted by potential contractors. Although funds for the half-million dollar project failed to materialize, the project had the effect of leveraging Exxon into picking up the idea, according to one ADEC spokesperson.<sup>49</sup>

The emphasis placed on developing “excavation” technologies in a net environmental benefits framework in Exxon’s 27 April work plan thus set the stage for development of the rock washer.

Early on, the FOSC requested that NOAA “conduct a Net Environmental Benefit Analysis (NEBA) to compare the benefits of excavation and rock washing with the benefits of natural cleanup as augmented by the approved 1990 cleanup

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47. S. Christopherson (ISCC), letter to Vice Adm. C. E. Robbins, 5 Sept. 1989, no. C2237, FOSC Exxon Valdez Archive. Two segments on Bettles Island (EV-53 and EV-54), immediate to the mouth of Sawmill Bay, are indicative. Both also had eagle nests which had complicated their treatment earlier in the year, and both were also on a list prepared by ADEC’s John Bauer of shoreline segments needing extensive treatment in the current year (J. Bauer, memorandum to chairperson [ISCC], 28 Aug. 1989, no. C2237, FOSC Exxon Valdez Archive). Many of the most heavily oiled areas in Prince William Sound were Native lands in the vicinity of the non-native Sawmill Bay hatchery. One of the most problematic heavily oiled sites, LA-20 (Sleepy Bay), received only limited hot water washing out of concern for sheening that might affect the Sawmill Bay hatchery.

48. N. Springer, J. Kichner, and B. Tidwell, Description of Excavation Rock Washing, in “Excavation and Rock Washing Treatment Technology Net Environmental Benefit Analysis” (compiled by Hazardous Materials Response Branch, NOAA, Seattle, July 1990), no. W1308, FOSC Exxon Valdez Archive, 3–12.

49. J. Hunt, “State Backed Off Its Own Rock Washer Plan,” *The Anchorage Times*, 6 May 1989.

methodologies.”<sup>50</sup> As later explained by Rear Admiral Ciancaglini, Exxon had only been willing to take on the rock washer as an engineering concept in conjunction with a simultaneous net environmental benefit analysis of it.<sup>51</sup> Exxon had obtained agreement in advance from NOAA, ADEC, and the Coast Guard that it could discontinue development if the NEBA showed that the rock washer would do more harm than good to the environment.<sup>52</sup>

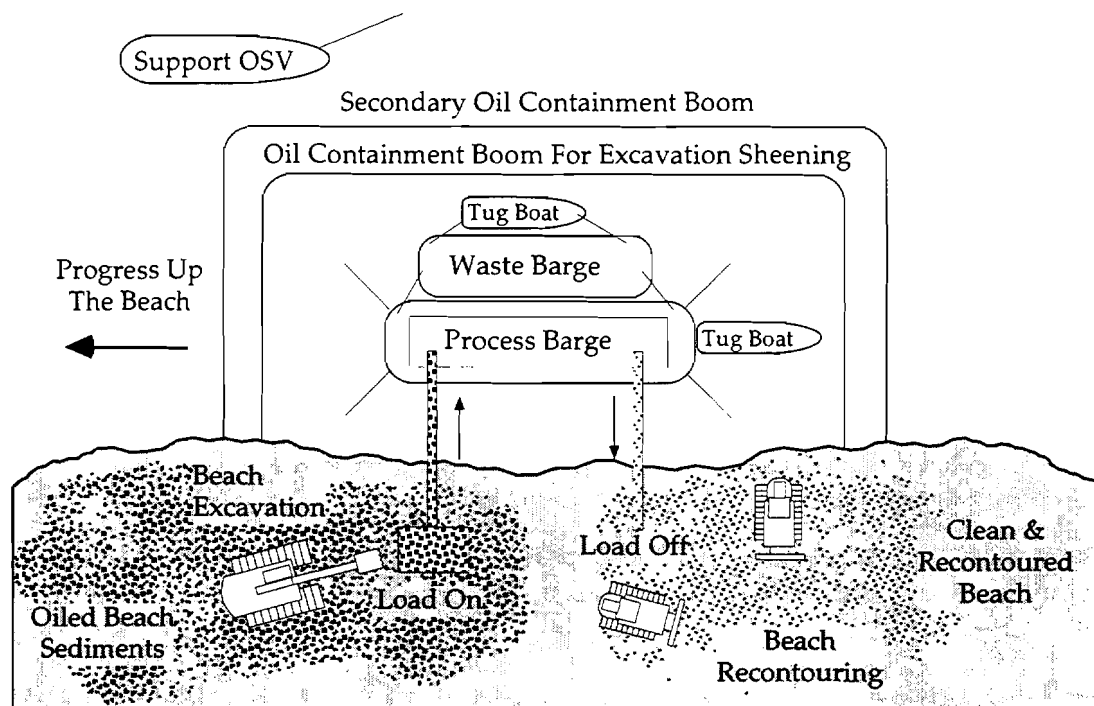


Figure 12.3. Schematic representation of rock washer operation.

The initial meeting of the ad hoc NOAA-Exxon-ADEC committee that was put together to examine the rock washer was held on 1 May. The group selected two shoreline segments, one at Sleepy Bay (on the north end of Latouche Island) and the other at Point Helen (on the southeast coast of Knight Island) for field studies. Exxon soon issued a technical information solicitation for developing the rock washer to a number of contractors.<sup>53</sup> A preliminary listing of the adverse and beneficial effects of both the proposed rock washer and the “no treatment” option (against which the rock washer would be compared in the NEBA) was also produced.<sup>54</sup> By 18 May, the number of study sites had grown to four, with studies to commence on 23 May.<sup>55</sup> Exxon released an

50. J. Robinson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 5 July 1990, no. W1310, FOSC Exxon Valdez Archive.

51. Rear Adm. D. E. Ciancaglini, letter to Hon. G. Buck (Whittier), 27 Aug. 1990, no. W1385, FOSC Exxon Valdez Archive.

52. Ibid.

53. Exxon, “Strip Mining Rock Washer Development and Testing Plan,” 8 May 1990, no. W1274, FOSC Exxon Valdez Archive.

54. E. Long (NOAA), “Exxon Valdez Rock Washer NEBA Project,” 11 May 1990, no. W1273, FOSC Exxon Valdez Archive.

55. R. Mastracchio (Exxon), letter to G. Hayden (ADEC), 23 May 1990, no. W1909, FOSC Exxon Valdez Archive.

official request for proposals to contractors on 14 May, and seven rock washer development proposals were received by the 31 May deadline.<sup>56</sup>

The field studies centered on the depth and quantities of subsurface oil and the prospects for its removal by natural processes, the rate of subsurface oil weathering and its likelihood of exposure by wave action, the degree to which subsurface oil was contaminating beach "pore water" and contributing to surface sheen production, as well as on a number of potential impacts of the rock washer and of oil left untreated in the subsurface environment.<sup>57</sup> The studies consumed several weeks, leading to a certain amount of impatience on the part of response leaders.<sup>58</sup>

A draft final report on the NEBA for the rock washing technology was ready for committee consideration on 20 June.<sup>59</sup> By 5 July, the final report was ready for release.<sup>60</sup> NOAA's John Robinson reported to the FOSC that it had become "clear that the major parties to the matter would be unable to reach agreement on the key issues."<sup>61</sup> Acknowledging in particular "disagreement between the State of Alaska and Exxon" on the conclusion of the analysis, NOAA offered the opinion:

[T]here is no net environmental benefit to be gained by shoreline excavation and washing—in fact we believe that this technology has the potential of aggravating the injury to the environment caused by the oil spill.<sup>62</sup>

Buried subsurface oil was seen by NOAA as posing little risk of further significant environmental injury, a conclusion it found supported by a number of findings from the study.

Based on these findings, Rear Admiral Ciancaglini soon notified ADEC's Randy Bayliss that he would not authorize use of the rock washer: "Although there is some disagreement regarding various conclusions in the report, there is sufficient basic information not in contention to support my decision," he wrote.<sup>63</sup> The state felt stung by the findings of the study, declaring the NEBA process to have been faulty and not representative of the state's interests.<sup>64</sup> The state felt in particular that socioeconomic factors of human use in high-use areas had not been given sufficient weight in the very natural science-focused study that emerged. Exxon, on the other hand, found the conclusions to be generally well supported.<sup>65</sup>

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56. Exxon Co., USA, inquiry no. WGH-0514-AO, 14 May 1990, no. W1902; and N. Springer (Exxon), memorandum to R. L. Mastracchio (Exxon), 3 June 1990, no. W1173, FOSC Exxon Valdez Archive.

57. J. Robinson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 5 July 1990, no. W1310, FOSC Exxon Valdez Archive. The potential adverse effects of the rockwasher included subtidal scouring, sterilization of beach material, shoreline sediment destabilization and resorting, sheening, downslope siltation, and disturbance of birds and marine mammals while the device was in use.

58. J. Robinson (NOAA), memorandum to Rear Adm. D. E. Ciancaglini, 8 June 1990, no. W1796, FOSC Exxon Valdez Archive.

59. J. Michel (NOAA), memorandum to NEBA committee members, 20 June 1990, no. W1258, FOSC Exxon Valdez Archive.

60. N. Springer, J. Kichner, and B. Tidwell, "Excavation and Rock Washing Treatment Technology Net Environmental Benefit Analysis." The final report was a voluminous two hundred page plus multi-authored document.

61. Robinson, memorandum to Ciancaglini, 5 July 1990.

62. Ibid.

63. Rear Adm. D. E. Ciancaglini, letter to R. Bayliss (ADEC), 16 July 1990, no. W1440, FOSC Exxon Valdez Archive.

64. R. Bayliss (ADEC), letter to Rear Adm. D. E. Ciancaglini, 7 July 1990, no. W1309, FOSC Exxon Valdez Archive.

65. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 7 July 1990, no. W1311, FOSC Exxon Valdez Archive.

Exxon soon notified ADEC and the Coast Guard that it was terminating its rock washer testing program.<sup>66</sup> To the state, however, this brought up once again the question of whose standards were controlling the cleanup, the state's or those of the federal government. Mr. Bayliss closed his letter to Rear Admiral Ciancaglini with a somewhat dire prediction:

By Alaskan law, the state retains authority to determine the adequacy of cleanup, and the benefits and costs associated with the application of treatment techniques. Given the progress of the cleanup to date we do not expect Exxon to complete the cleanup in 1990 without the use of mechanical techniques such as excavation and rock washing.<sup>67</sup>

Reflecting on the rock washer episode in 1992, NOAA's Jacqui Michel, who had chaired the ad hoc committee, believed that the NEBA process became more a test of which organization would prevail than an exercise in scientific analysis. The state's position, in Dr. Michel's view, was to make Exxon do something because it wanted to make them do it, while Exxon maintained a preconceived notion that no net environmental benefit was to be found. In hindsight, she felt, the science in the NEBA process may have gotten lost.<sup>68</sup>

In a somewhat curious postscript to the rock washer episode, Charles Ehler, director of NOAA's National Ocean Service in Rockville, Maryland, and charged with coordinating NOAA's involvement in damage assessment studies of the spill, disavowed any interpretation of the characterizations of subsurface oil effects that resulted from the scientific studies, beyond their application to the rock washer per se.<sup>69</sup>

## STORM BERM RELOCATION

Storm berms are shoreline features that occur beyond the reach of normal high tides, as they are created by storm-induced wave action, typically during the winter. When storm berms become oiled, they are unlikely to be cleansed by the normal wave patterns of summer months. Moreover, because they are typically loose aggregations of gravel and cobbles, the oil in them is likely to be buried. Oiled storm berms were a problem that became more evident in 1990, as a result of the sediment reworking wrought by the storms of the preceding winter.

The 1989 "Field Shoreline Treatment Manual" had described among its shoreline treatment methods "relocation to surf zone," a process whereby oiled sediments could be cleaned by pushing them down into the intertidal zone where they would be exposed to wave action.<sup>70</sup> "Berm relocation" was mentioned as among the techniques

66. O. Harrison (Exxon), letter to R. Bayliss (ADEC) and Rear Adm. D. E. Ciancaglini, 17 July 1990, no. W1708, FOSC Exxon Valdez Archive.

67. C. Burgh (for R. Bayliss, ADEC), letter to Rear Adm. D. E. Ciancaglini, 7 July 1990, no. W1309, FOSC Exxon Valdez Archive.

68. J. Michel (NOAA), interview by Dr. T. Leschine (FOSC staff), A. van Emmerik (FOSC staff), and Lt. Comdr. R. Gaunt, Anchorage, 28 May 1992, no. F674, tape, FOSC Exxon Valdez Archive. Otto Harrison when asked to comment on Michel's assessment of the NEBA, disagreed. Exxon wasn't enthusiastic about rock washing, he said, but stood prepared to go along with it had the NEBA concluded that it was the way to go (O. Harrison [Exxon], conversation record with Lt. Comdr. R. Gaunt, 4 May 1993, no. F809, FOSC Exxon Valdez Archive).

69. C. Ehler (NOAA), letter to Rear Adm. D. E. Ciancaglini, 17 July 1990, no. W1521, FOSC Exxon Valdez Archive.

70. USCG, "Field Shoreline Treatment Manual," 5 June 1989, no. C1886, FOSC Exxon Valdez Archive.

preferable to full excavation or strip mining in Exxon's "1990 Work Program" document.<sup>71</sup> The storm berm relocation policy that emerged through the FOSC in 1990 involved berm relocation as originally conceived, but with the important modification that the technique was now built around application of bioremediation to the exposed sediments.<sup>72</sup>

Controversies arose over storm berm relocation projects because, in the process of mechanically removing the storm berm, pockets of pooled oil or heavily oiled residue, deposited by the same storms which had created the berms in the first place, were often uncovered. The question was to what extent these oiled sediments should be removed prior to bioremediation. The state's position was that extensive removal should occur, so that when bioremediation was used, it was only being applied to moderate concentrations of oil. The difficulty of interpretation this sometimes engendered is well-illustrated at LA-20A, on the northern tip of Latouche Island, in the area known as Sleepy Bay.

#### LA-20 (SLEEPY BAY)

On 13 July 1990, a berm relocation was conducted on LA-20A (figure 12.4). Alaska Department of Environmental Conservation field monitors reported however that the process of moving the storm berm had uncovered both pooled oil and heavy oily residue. The result was a letter of protest to Exxon from ADEC's deputy OSC, Colleen Burgh. Ms. Burgh stated that the approved cleanup techniques required removal of oil down to a "moderate" concentration before bioremediation, and not the spreading of oiled material over the beach, as the monitors had reported Exxon's work crews to be doing:

You cannot mix OP [pooled oil] subsurface sediments with uncontaminated sediments to reduce the concentration on the shoreline....Continuing to violate the approved cleanup plan may result in enforcement action against Exxon under state laws AS 46.04.020 and regulation 18 AAC 75.140.<sup>73</sup>

Coast Guard Commander Rome, operations officer, recommended that TAG come up with a work plan modification for the subdivision, incorporating comments from nearby Chenega Village, which had also expressed concern about the degree of oiling at Sleepy Bay. He argued however, that subsurface oil below 20 centimeters should not be disturbed, as it did not pose a significant environmental threat.<sup>74</sup>

The FOSC signed a work order modification on 21 July. The Technical Advisory Group was unable to reach a consensus in its recommendation to the FOSC, however, as ADEC representative John Bauer continued to insist on excavation and removal of the most heavily oiled material.<sup>75</sup> Chenega representatives reviewed and approved the plan submitted to the FOSC, provided that the many inserted details on how operations

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71. Exxon, "1990 Work Program," 27 Apr. 1990, appendix two, no. W763, FOSC Exxon Valdez Archive.

72. Exxon, "Bioremediation Monitoring Program," 18 May, 1990, attachment 3, no. W1119, FOSC Exxon Valdez Archive, 2.

73. C. Burgh (ADEC), letter to R. Buckley (Exxon), 13 July 1990, no. W1513, FOSC Exxon Valdez Archive.

74. Comdr. D. Rome, memorandum to FOSC, 13 July 1990, no. W1514, FOSC Exxon Valdez Archive.

75. TAG, memorandum to Rear Adm. D. E. Ciancaglini, 20 July 1990, no. W1344, FOSC Exxon Valdez Archive.

were to be conducted were followed. Oil recovery in conjunction with operations would be limited to that which could be done with sorbent materials and snare booms. Hot-water flushing would be used to enhance oil removal.<sup>76</sup>

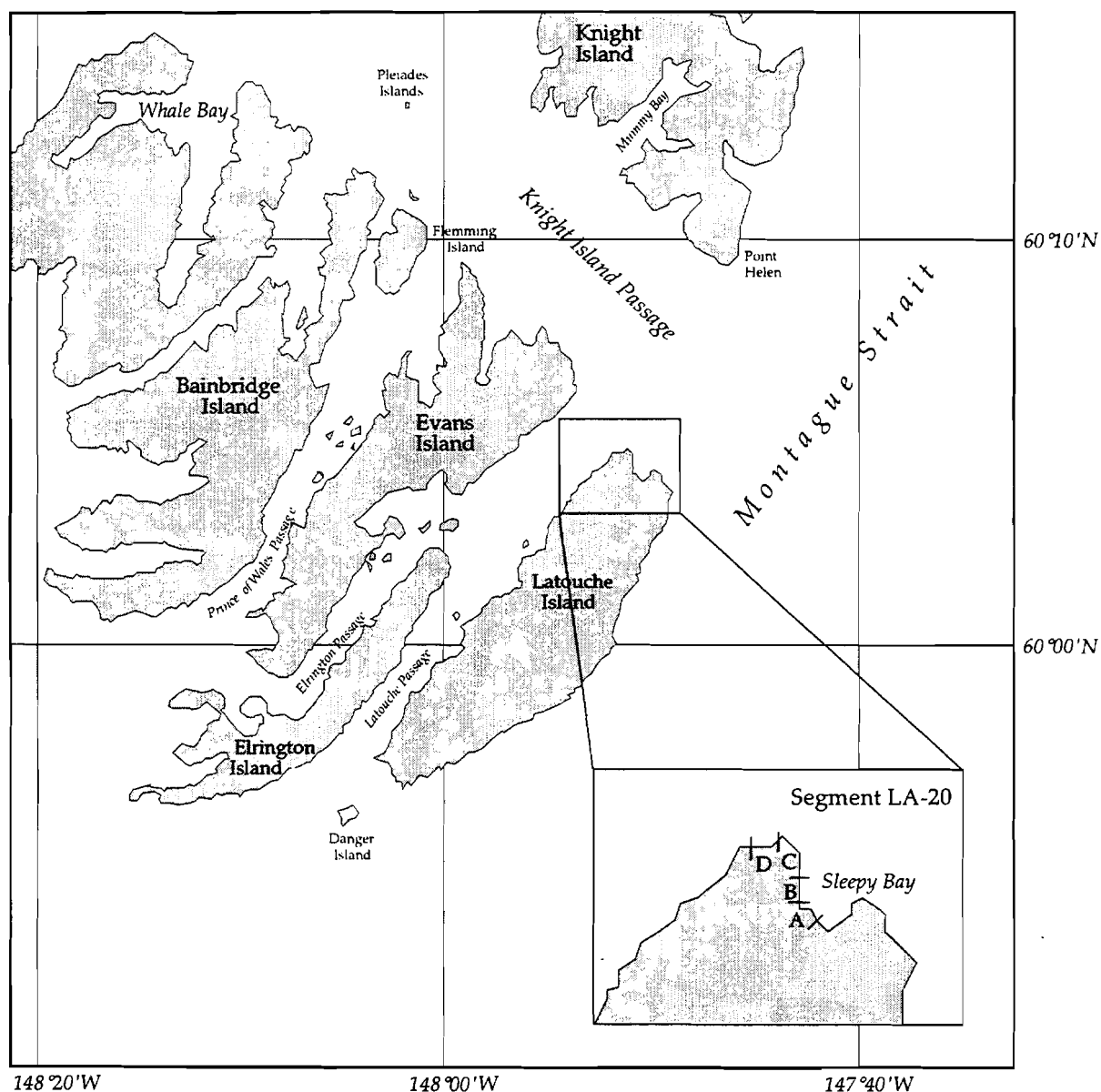


Figure 12.4. Approximate location of segment LA-20 (and subdivisions A–D) on Latouche Island.

The problem, as again reported by ADEC field monitors and relayed by John Bauer to Commander D. Rome, was that the Exxon crews performing the work did not follow the plan. Relocated sediments were not adequately washed and spread, the monitors claimed, and the oil freed in the operations was not properly recovered.<sup>77</sup> Having lost the battle to have oily sediments hauled off the site, ADEC was now seemingly insisting instead on a very high performance standard for the operations that were conducted.

76. Comdr. D. Rome, letter to J. Bauer (ADEC), 8 Aug. 1990, no. W1356, FOSC Exxon Valdez Archive.

77. J. Bauer (ADEC), letter to Comdr. D. Rome, 4 Aug. 1990, no. W1344, FOSC Exxon Valdez Archive.



The debate over what should be done at LA-20A soon turned procedural and technical. Commander Rome felt that whatever calls were made in the field as the work proceeded had to stand, since ADEC's field monitors had not invoked the "class III" TAG work order modification procedures that were available to them.<sup>78</sup> Exxon's operations managers agreed with Commander Rome, citing a number of site conditions that they felt justified leaving most of the washing to the forces of nature as they had done.<sup>79</sup> It was pointed out that intensive deluge washing at this site might simply drive the oil deeper into the cobbles.

This marked the end of the LA-20A story for the time being, but Sleepy Bay was a problematic area that continued to get cleanup attention until the entire cleanup ended in 1992. Oil remained at LA-20A when the shoreline cleanup was terminated and will likely be present for years to come.

#### THE US-10 (USHAGAT ISLAND) CONTROVERSY

The cleanup of US-10, an oiled shoreline segment on Ushagat Island, westernmost of the Barren Islands group (figure 12.5), was likely the most vexing single-subdivision controversy of the entire response. The US-10 site proved to be something of a "worst case scenario" cleanup problem. It featured the combination of a hard-to-reach and storm-wracked site, exceptionally high wildlife resource values, an unusually large buried oil lens, and a cleanup proposal that managed to embody precisely those elements over which the state and Exxon were most at odds. The cleanup that eventually took place late in 1990 appears not to have had its intended result, leading to accusations by the U.S. Marine Mammal Commission that the section 7 consultative requirements of the Endangered Species Act had been violated.

The Barren Islands lie midway between the Kenai Peninsula and Kodiak-Afognak islands. They are uninhabited, and as part of the Alaska Maritime National Wildlife Refuge, lie within the jurisdiction of the U.S. Fish and Wildlife Service. The Barren Islands are said to provide feeding and nesting habitat for more than one million seabirds, making them the single most important seabird site in the northern Gulf of Alaska.<sup>80</sup> Ushagat Island and surrounding territory is also home to more than one thousand Steller sea lions, which, as of 5 April 1990, were listed as a "threatened" species under the Endangered Species Act.<sup>81</sup>

The US-10A site was a long, steep crescent cobble/pebble/gravel beach classified as a very high energy shoreline. A 1989 spring high tide had deposited a long swath of mousse on the beach which was subsequently buried to a depth of up to four feet by pebbles and gravel, as a result of storms.<sup>82</sup> The lens was estimated to be four hundred yards long by six yards wide (and one to six inches thick), and to contain between six hundred and eight hundred cubic yards of oiled material. Because of the presence of a

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78. Rome, letter to Bauer, 8 Aug. 1990.

79. R. F. Buckley (Exxon), letter to Comdr. D. Rome, 17 Aug. 1990, no. W1408, FOSC Exxon Valdez Archive.

80. Regional Director (FWS Region 7), memorandum to Office of Environmental Affairs (Alaska), 27 Aug. 1990, no. W1982, FOSC Exxon Valdez Archive.

81. S. Pennoyer (NMFS), letter to Rear Adm. D. E. Ciancaglini, 31 Oct. 1990, no. F030, FOSC Exxon Valdez Archive.

82. A. Teal (Exxon), to Comdr. D. Rome, 9 Aug. 1990, no. W1350, FOSC Exxon Valdez Archive.

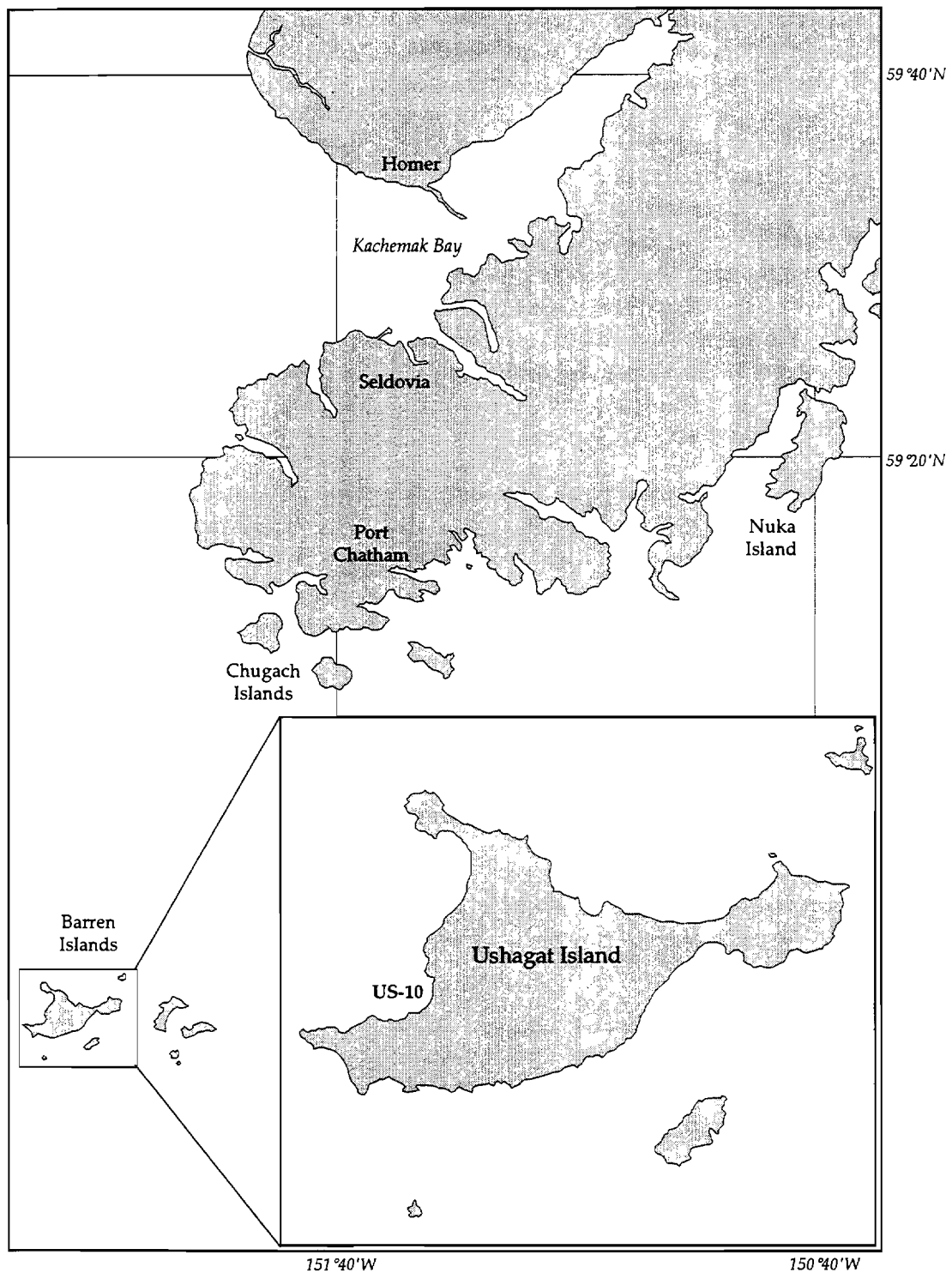


Figure 12.5. Approximate location of segment US-10 on Ushagat Island.

very large seabird rookery on the island, no cleanup could take place before 1 September, forcing whatever action was to be taken into the last two weeks of the cleanup season, when sea conditions were already beginning to deteriorate.<sup>83</sup>

In 1989, Exxon had proposed a simple "type A" cleanup for the site.<sup>84</sup> The Homer ISCC felt the site was appropriate for bioremediation, but because of the depth of oil penetration, felt that substantial sediment overburden had to be removed before the bioremediation agents could be applied.<sup>85</sup> The Homer Incident Command Post (ICP) advised that to allow Exxon to simply bioremediate the site without substantial additional work would lead to serious problems with the Homer MAC.<sup>86</sup> Homer MAC chairperson Mike Hedrick soon went on record that pooled oil and other oily debris had to be removed prior to bioremediation, taking his concern directly to Admiral Paul Yost.<sup>87</sup> Only surface mousse was removed, however, and the work was soon terminated with the approach of winter.

The question of what to do about the subsurface oil on US-10 remained unresolved in 1990. By 20 June, the FOSC had visited the site and recommended to TAG that it prepare a work order involving a storm berm relocation to expose the buried oil lens to bioremediation.<sup>88</sup> Exxon produced a proposed approach for treating the site on 9 August. Four options were outlined, ranging from doing nothing to exposing the lens and hauling it away.<sup>89</sup> It was argued that doing nothing meant the buried lens would continue to be an "issue" in the next year on the one hand, and that hauling the oiled material away at the other extreme could require as many as six hundred helicopter trips taking up to one hundred days to complete. Among other problems with leaving the oil in place, the report noted, was the possibility that if uncovered by a storm, sheening might occur at the lower wave energies of the spring, thereby exposing migrating birds to the oil.

The recommended approach was a middle-ground option, removing the overburden, and relocating the oiled lens to the face of the summer storm berm above the mean high tide line:

With oiled sediments on the face of the berm normal tidal flushing will not affect it. [sic] Storm wave energy will be needed to reach the oiled area and therefore carry sufficient energy to disperse and dissipate the oil, thereby reducing the risk to marine life.<sup>90</sup>

A small test storm berm relocation was conducted on another part of Ushagat Island (segment US-5) on 3 August, but the test was hampered by bad weather. On 7 August, TAG conducted a site visit to US-10, and scheduled a meeting for 13 August to review

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83. The site is said to be often unapproachable by vessel due to the steepness of the waves in its vicinity. The area is also notorious for sudden changes in weather.

84. G. Raz (Exxon), memorandum to M. Hedrick (FWS) and Homer MAC, 18 June 1989, no. C2604, FOSC Exxon Valdez Archive.

85. J. Whitney (Homer ISCC), memorandum to Lt. D. S. Comdr. Lewis (Homer ICP), 31 July 1989, no. C1352, FOSC Exxon Valdez Archive.

86. Assistant ICP Homer, memorandum to AOSC (western Alaska), 3 Aug. 1989, no. C1352, FOSC Exxon Valdez Archive.

87. M. Hedrick (Homer MAC), letter to Adm. P. Yost (commandant), 21 Aug. 1989, no. W1761, FOSC Exxon Valdez Archive.

88. USCG FOSC, memorandum to TAG, 20 June 1990, no. W1851, FOSC Exxon Valdez Archive.

89. A. Teal (Exxon), letter to Comdr. D. Rome, 9 Aug. 1990, no. W1350, FOSC Exxon Valdez Archive.

90. Ibid.

Exxon's plan. The FWS gave its permission for work at the site to commence after 1 September.<sup>91</sup>

At the 13 August meeting, TAG was unable to reach consensus, as ADEC's representative insisted that the buried lens had to be excavated and hauled away.<sup>92</sup> The land manager, the U.S. Fish and Wildlife Service, had gone on record as accepting Exxon's proposal, though a letter from Paul Gates made it clear that this was a pragmatic compromise to the preferred option, the state plan. "If weather constraints prevent the work from happening this year, we will request total removal of the oiled material during next year's cleanup season," the letter said.<sup>93</sup>

The state remained adamant in its opposition to any option that did not result in removal from the island of the oiled material.<sup>94</sup> Soon the FWS waived, suggesting a compromise of storing the oily material in impermeable containers in upland areas so that it could be removed in the spring.<sup>95</sup> The next day, however, following a meeting, FWS went back to its original position of supporting the storm berm relocation, this time for reasons of technical feasibility.<sup>96</sup> As the window when operations could begin neared, the state stepped up the tempo of its opposition. A 31 August letter to Otto Harrison brought up for the first time the presence of sea lions in areas where they could be affected by oil liberated from the US-10 cleanup.<sup>97</sup> The point was reinforced in a second letter sent to Rear Admiral Ciancaglini jointly by the commissioners of ADEC, ADF&G, and the Alaska Department of Natural Resources. The storm berm relocation "will only redistribute the oil back into the marine environment," the letter said, going so far as to suggest that to do so would cause a second oil spill, in violation of both state and federal law.<sup>98</sup> Rear Admiral Ciancaglini soon approved the work order, however, and the work was performed on three days in early September.

The matter did not end there, as recriminations continued through the remainder of the year. The Steller Sea Lion Recovery Team (convened as a result of the listing of Steller sea lions as "threatened" species) had entered the fray as work was underway, advising the National Marine Fisheries Service (NMFS) administrator that the proposed work could result in "unacceptable contamination of important sea lion habitat."<sup>99</sup> A follow-up letter to Rear Admiral Ciancaglini from the NMFS

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91. R. Morris (ADEC TAG rep.), memorandum to D. Lockwood (ADEC Oil Spill Response Center), 10 Aug. 1990, no. W1980, FOSC Exxon Valdez Archive.

92. A. Teal (Exxon), letter to Rear Adm. D. E. Ciancaglini, 15 Aug. 1990, no. W1349, FOSC Exxon Valdez Archive.

93. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 17 Aug. 1990, no. W1348, FOSC Exxon Valdez Archive.

94. R. Bayliss (ADEC), letter to Rear Adm. D. E. Ciancaglini, 17 Aug. 1990, no. W1347; and Rear Adm. Ciancaglini, letter to R. Bayliss, 27 Aug. 1990, no. W1666, FOSC Exxon Valdez Archive.

95. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 28 Aug. 1990, no. W1346, FOSC Exxon Valdez Archive.

96. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 29 Aug. 1990, no. W1388, FOSC Exxon Valdez Archive.

97. R. Bayliss (ADEC), letter to O. Harrison (Exxon), 31 Aug. 1990, no. W1392, FOSC Exxon Valdez Archive.

98. Commissioners D. Kelso (ADEC), D. Collinsworth (ADF&G), and R. Swope (ADNR), letter to Rear Adm. D. E. Ciancaglini, 31 Aug. 1990, no. W1389. The Admiral pointed out in his reply that the state had in the past agreed to sink or ignite stranded vessels, thereby releasing considerable oil into the marine environment, as a means of eliminating pollution threats. He also said that he would have been content to leave the oil in place where it was doing no harm (Rear Adm. D. E. Ciancaglini, letter to D. Kelso [ADEC], 1 Sept. 1990, no. W1390, FOSC Exxon Valdez Archive).

99. L. F. Lowry (Steller Sea Lion Recovery Team), letter to W. Fox (assistant administrator for fisheries), 4 Sept. 1990, no. W1397, FOSC Exxon Valdez Archive.

recommended that future cleanup activities that could affect threatened or endangered species be subject to the Endangered Species Act (ESA) section 7 consultations.<sup>100</sup>

Numerous other squabbles broke out. Exxon and ADEC battled back and forth about how much oil had actually been contained in the storm berm.<sup>101</sup> Exxon general manager Otto Harrison published a "Counterpoint" column on the cleanup in the *Anchorage Daily News* that provoked a vitriolic response from new State OSC Ernie Piper.<sup>102</sup>

Most ironic, perhaps, the storm berm relocation on US-10 appears not to have gone as planned. The Homer ISCC reported that oiled material was pushed too far down the beach face during operations, and as a result began immediately to erode into the water.<sup>103</sup> The ISCC's letter contended that floating oil was observed on 7 September, along with contaminated birds. The Marine Mammal Commission (MMC) picked up this theme, stating now that the earlier recommendation to consult on endangered species matters had in fact been an obligation.<sup>104</sup> What seems to have happened was precisely what Andy Teal had said in his original 9 August proposal was the environmental problem most to be avoided.

Rear Admiral Ciancaglini pointed out in his reply to the MMC that a 27 November "cursory" survey of the site, in which test pits were dug revealed little or no remaining oil.<sup>105</sup> Perhaps the hardest-to-answer question raised by the US-10 episode goes back to the fundamental point raised by the state of Alaska in its initial objection to the basic thrust of the 1990 cleanup: what value to place on present damage caused by cleanup in the name of more rapid recovery in the future. As Rear Admiral Ciancaglini noted in his reply to Mr. Hofman of the MMC, if the oil had in fact been removed from the US-10 environment by the actions undertaken in the storm berm relocation project, then the wildlife that return to the area in subsequent years will be free of exposure to oil's harmful effects.

#### STORM BERM RELOCATION AFTER 1990

Ultimately thirty storm berm relocation projects were undertaken in 1990. The US-10 project was the largest, with more than one thousand cubic meters of material moved.

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100. S. Pennoyer (NMFs), letter to Rear Adm. D. E. Ciancaglini, 31 Oct. 1990, no. F030, FOSC Exxon Valdez Archive.

101. H. O. Jahns (Exxon), memorandum to R. L. Mastracchio (Exxon), 15 Sept. 1990, no. W1585, FOSC Exxon Valdez Archive. Prior to the removal work, the state had claimed 5,000 gallons while Exxon estimated about 500. Afterwards the state estimated a range of 700–2400 gallons (plus an additional 250 gallons in a secondary lens) while Exxon estimated 925 to 1600 gallons.

102. O. Harrison, "Exxon Says Oil Off Ushagat Will Not Harm Wildlife," *Anchorage Daily News*, 22 Sept. 1990; and E. Piper (ADEC), draft of reply to *Anchorage Daily News* article, 25 Sept. 1990, no. W1978, FOSC Exxon Valdez Archive. It was not published. The Sierra Club Legal Defense Fund challenged the Coast Guard to apply the same NEBA standard it had used to rule out the rock washer to the storm berm relocation on US-10, claiming that most of the adverse effects cited in the rock washer study were the results of excavation, the focus of the US-10 proposal (E. P. Jorgensen and T. S. Waldo [Sierra Club Legal Defense Fund], letter to Rear Adm. D. E. Ciancaglini, 5 Sept. 1990, no. W1393, FOSC Exxon Valdez Archive).

103. D. K. Kenagy (Homer ISCC), letter to Rear Adm. D. E. Ciancaglini, 10 Sept. 1990, no. W1979, FOSC Exxon Valdez Archive.

104. R. J. Hofman (MMC), letter to Rear Adm. D. E. Ciancaglini, 29 Nov. 1990, no. F039, FOSC Exxon Valdez Archive.

105. Rear Adm. D. E. Ciancaglini, letter to R. J. Hofman (MMC), 14 Dec. 1990, no. F53, FOSC Exxon Valdez Archive.

Nearly six thousand cubic meters of oiled material was moved in all in the thirty projects.<sup>106</sup>

When TAG approved the use of berm relocation in 1990, it had done so with the understanding that there would be follow up studies at sites where the procedure had been employed. Woodward-Clyde, under contract to Exxon, conducted post-treatment assessment visits to twenty-five of the thirty berm relocation sites during the period of 26 April through 5 May 1991.<sup>107</sup>

Woodward-Clyde's study team found "no visible surface oil" at thirteen of the sites, and very light or light surface oiling at the remainder. No visible subsurface oil was observed in 90 of 122 pit excavations. Eight of the pits showed heavy oil coats or "partially filled pore spaces" (the heaviest oiling category in the study). Woodward-Clyde concluded, "This approach has resulted in a successful treatment program, in terms of enhancing the normal recovery of the sites, and no adverse environmental changes have been observed."<sup>108</sup>

Exxon's "1991 General Operations Plan" did not envision much use of storm berm relocation, since most areas that would have been candidates for this treatment were treated in 1990.<sup>109</sup> As events unfolded, however, Exxon came to face four additional berm relocation projects, two each on Latouche and Knight islands. One, at Point Helen on the southeastern tip of Knight Island (KN-405), was the most extensive berm relocation project of the entire response.

*KN-405 (Point Helen).* The eastern side of Point Helen consists of a long and straight rocky/cobble beach that received considerable oiling in 1989 (figure 12.6). It was treated extensively that year with cold- and hot-water washing and manual and mechanical removal. Surface conditions improved considerably over the winter, but later surveys revealed large areas of subsurface oiling, particularly in storm berms above the intertidal zone. Moreover, the shoreline had problematic features as a result of the 1964 earthquake. Uplift, caused by the earthquake had stranded a terrace at the rear of the beach, running nearly its whole length. As the foot of this terrace was a grassy swale that had become a collecting place for oily debris, and future berm migration might bury any oil left in this area. Bioremediation was used on KN-405 in 1990.

In 1991, Exxon had not initially anticipated extensive additional work at the site. The state had wanted a more detailed survey of the extent of subsurface oiling, as its own limited subsurface oiling surveys had found oil buried at exceptional depths, up to seventy centimeters in some places. The state opposed substantial excavation,<sup>110</sup> and

106. Woodward-Clyde Company, "Berm Relocation Survey 1991," 6 May 1991, no. F826, FOSC Exxon Valdez Archive.

107. *Ibid.*, sections 1.2 and 2. In addition the Woodward-Clyde study, NOAA completed a smaller (eleven site) mid-winter survey of treatment areas.

108. *Ibid.*, Executive Summary.

109. Exxon, "1991 General Operations Plan," 21 May 1991, sec. 3, no. F206, FOSC Exxon Valdez Archive.

110. J. Bauer (ADEC), letter to Lt. Comdr. J. Madden, 19 June 1991, no. F356, FOSC Exxon Valdez Archive. Both the Sawmill Bay fish hatchery and important Chenega subsistence areas were immediately "downstream" of the site, and there were concerns that extensive mechanical work would result in difficult-to-control oil sheening.

TAG and the FOSC had opted for limited manual work and bioremediation.<sup>111</sup> Exxon concurred with this recommendation.

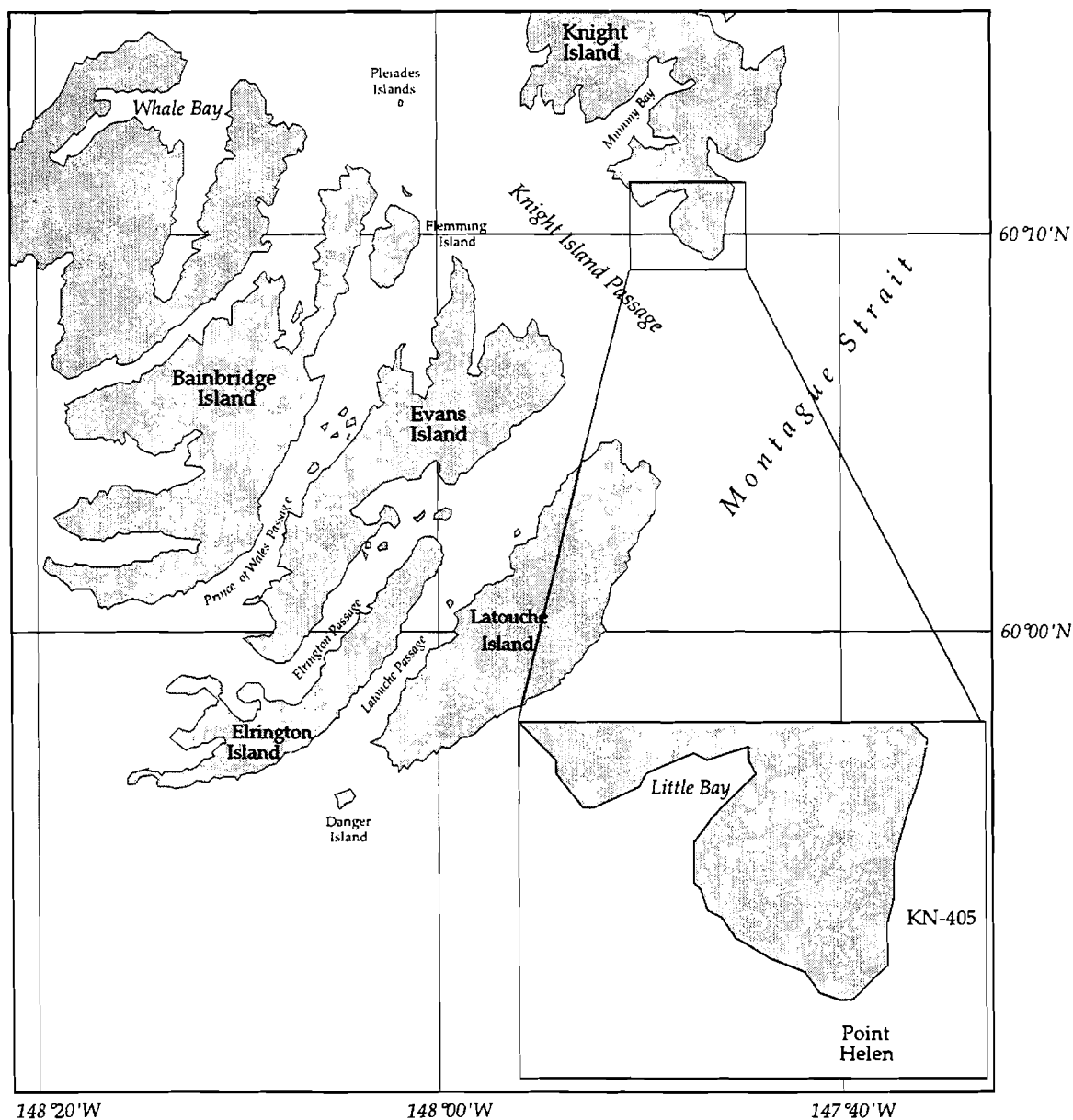


Figure 12.6. Approximate location of segment KN-405 on Knight Island.

In mid-June, however, the company somewhat surprisingly reversed its position. "After additional visits to Point Helen and in-house review, we have re-evaluated the conditions on Point Helen and are of the opinion that there is an overall incentive to conduct more intensive treatment on this site to accelerate the natural cleansing processes," wrote Otto Harrison.<sup>112</sup> Exxon's proposal was to relocate nearly eighteen

111. O. Harrison (Exxon), letter to Rear Adm. D. E. Ciancaglini, 15 June 1991, no. F498, FOSC Exxon Valdez Archive.

112. Ibid. Unconfirmed rumor had it that a helicopter tour by high-level Exxon officials from Houston was instrumental in the reversal of the company's position on Point Helen, as the surface oiling was readily visible from the air.

hundred meters of storm berm with the use of mechanical equipment. This was more than four times the length of the storm berm area relocated earlier on US-10.

When TAG discussed the work proposed by Exxon, NOAA emerged as the lone dissenter. NOAA's scientific support coordinator Joe Talbott argued that the oil in the storm berm had now weathered to the point where it no longer presented a significant threat to the environment. Moreover, extensive mechanical reworking of beach sediments would set back both biological and post-earthquake geological recovery of the shoreline, in his view. The project nevertheless went forward, taking place in the latter part of June, and consuming 13.5 workdays. The treatment area covered 8,350 square meters.

Three other berm relocation projects were completed by mid-July.<sup>113</sup> There were no storm berm relocation projects during 1992.<sup>114</sup>

### **SPECIAL STUDY SITES (THE "SET-ASIDE" AGREEMENT)**

The problem posed by trying to set up scientific studies in the midst of a major oil spill response was well summarized in very early correspondence on the subject between the Prince William Sound ISCC and the FOSC:

A large number of different groups and agencies are currently engaged in short- and long-term studies....This has resulted in a proliferation of both long- and short-term study sites throughout the area of impact. A number of these studies are based on the premise that the proposed research site will not be cleaned up during the course of the study....If an oiled "study site" is left untreated, will it contribute to reoiling of adjacent shorelines after they have been cleaned; are there sensitive resources in the area which may be adversely impacted by the oil; has the study been approved or permitted by the appropriate land owner/manager; and if the study site is not treated, what assurance is there that the research site will be returned in a condition satisfactory to the land owner/manager at the completion of the study?<sup>115</sup>

The ISCC recommended that all special study sites be subject to approval by the FOSC, following agency and ISCC review. The ISCC review would focus on the implications of designation of the study site for the rest of the cleanup. It was stressed that thorough documentation of agency/land manager approvals, study purpose and design, restrictions on access or other activities necessary for the study to succeed, exact location of study site boundaries, and a detailing of procedures to be used to remove oil and return the site to its owner or manager were necessary if a "special study site" program was to be viable.

In late June, Exxon made its first request for special study sites, "Five short sections of shore as part of [our] spill evaluation program."<sup>116</sup> The segments ranged from fifty to two hundred meters in length, and were located on Elrington, Latouche, and Evans

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113. Exxon, "1991 Work Program Status and Continuing Programs," 15 Aug. 1991, attachment 2.5, no. F184, FOSC Exxon Valdez Archive.

114. USCG, "1992 Work Program Completion Report," Aug. 1992, no. F692, FOSC Exxon Valdez Archive.

115. ISCC, memorandum to FOSC, 16 June 1989, no. C1082, FOSC Exxon Valdez Archive.

116. A. Teal (Exxon), memorandum to ISCC Valdez, 28 June 1989, no. C859, FOSC Exxon Valdez Archive.



Islands. The principal objective of the proposed studies was to “monitor rates of natural self-cleaning on five representative segments of contaminated coast within Prince William Sound.”<sup>117</sup>

The National Oceanic and Atmospheric Administration recommended in July that a formal special study site program go forward.<sup>118</sup> By mid-July, Exxon had expanded the list of sites which it wanted to be deferred from cleaning for study purposes to eleven sites.<sup>119</sup> Controversy developed over this application however, initially because Exxon would not commit to cleaning the sites at the end of the five-year study period it was proposing. EPA’s ISCC representative produced a very detailed technical criticism of the study design as well.<sup>120</sup>

Exxon soon withdrew its proposal. Fearful that the chance to set aside study sites would soon be lost, NOAA, acting through its administrator, took the case directly to Admiral Yost that the sites be set aside, proposing NOAA sponsorship of the study program.<sup>121</sup> Admiral Yost eventually extracted a promise of bonding for site treatment in the amount of \$750,000 from Exxon so that the program could proceed.<sup>122</sup>

The matter of the “set-aside” sites, as they later became known, remained unresolved through August. But ADEC offered to process permits for such sites under its pollution control statutes, which provided for oil discharge permits for scientific purposes (18 AAC 75.190).<sup>123</sup> A memorandum of understanding involving the state, NOAA, and the Coast Guard was then under negotiation.<sup>124</sup> A new Exxon proposal for special study site protection, this time involving seven sites, was submitted on 25 August.<sup>125</sup>

Once the bonding by Exxon had been secured in mid-September, negotiations on the set-aside sites could proceed. They continued to move slowly, however. By late November, the question of whether the money promised by Exxon would be conveyed “up front” to the state was still at issue.<sup>126</sup> Protocols for future site cleanup were also under discussion, particularly with respect to whether ADEC or the Coast Guard would have the lead, and whether “concurrence” or “consultation” was required. An oversight “Set-Aside Committee” to coordinate and administer the agreement was also

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117. *Ibid.*

118. NOAA, “Set Aside Sites 1991 Status,” 24 July 1991, no. F812, FOSC Exxon Valdez Archive.

119. A. Teal and A. Maki (Exxon), memorandum to ISCC Valdez/land managers, 17 July 1989, no. C1043, FOSC Exxon Valdez Archive.

120. S. E. Cunniff (EPA), memorandum to file, 21 July 1989, no. C1145, FOSC Exxon Valdez Archive.

121. B. K. Burton (NOAA), letter to Adm. P. Yost (commandant), 26 July 1989, no. C2202, FOSC Exxon Valdez Archive.

Mr. Burton also took the case for special study sites to Dale Robertson, head of the U.S. Forest Service (B. K. Burton, letter to F. D. Robertson [FS], 26 July 1989, no. C1176, FOSC Exxon Valdez Archive).

122. Adm. Yost (commandant), letter to B. K. Burton (NOAA), 12 Sept. 1989, no. C2203, FOSC Exxon Valdez Archive. Rear Adm. Robbins had tried to get Exxon to post such a bond in August, but his proposal was rejected. He urged Exxon not to clean the sites pending a final decision (Vice Adm. C. E. Robbins, letter to O. Harrison [Exxon], 5 Aug. 1989, no. C1378, FOSC Exxon Valdez Archive).

123. S. Provant (ADEC), letter to O. Harrison (Exxon), 11 Aug. 1989, no. C1594, FOSC Exxon Valdez Archive.

124. Vice Adm. C. E. Robbins, letter to D. Kennedy (NOAA), 11 Aug. 1989, no. C1613, FOSC Exxon Valdez Archive.

125. A. Teal and A. Maki (Exxon), memorandum to ISCC Valdez/land managers, 25 Aug. 1989, no. C1120, FOSC Exxon Valdez Archive.

126. Capt. J. Collom, memorandum to file (G-LMI), 20 Nov. 1989, no. W172, FOSC Exxon Valdez Archive. See also M. Smith (Exxon), letter to M. Mitchell (Preston, Thorgrimson and Holman), 21 Nov. 1989, no. W173, FOSC Exxon Valdez Archive. Various draft versions of Exxon’s, “Agreement To Set Aside Specified Oiled Beaches for Scientific Study” (e.g., 21 Nov. 1989, no. W174, FOSC Exxon Valdez Archive), are also available.

under discussion. A draft set-aside agreement was not finalized until late December,<sup>127</sup> and the agreement was not signed by all parties (Exxon, ADEC, and the FOSC) until 23 January 1990.<sup>128</sup>

Nine shoreline locations, collectively comprising about two thousand meters in total of (mostly moderately oiled) Prince William Sound shoreline were set aside (figure 12.7). They were intended to serve as untreated sites available for scientific fate and effects studies for a period of ten years.<sup>129</sup> The agreement specifically provided that its existence did not affect liability for the spill. Nor was it intended to have precedential effect or to constitute evidence in ongoing litigation.

Unfortunately, the set aside program turned out to be suffering implementation problems even before the agreement was signed, as NOAA later determined that, in each of 1989, 1990 and 1991, sites intended for inclusion in the program, and on the final list of sites approved in the agreement, had received unintended treatments. During 1989 two had been warm- or hot-water washed. These two and one other had also received bioremediation applications. In 1990 one of these sites was *again* treated and one additional segment received limited manual treatment. That site and an additional set-aside site were again visited by cleanup workers in 1991.<sup>130</sup> Less than two years after the signing of the agreement, only four of the original nine set aside sites had not received any treatment.

Despite these problems, studies went forward at the set aside sites. Exxon included several of the sites in its forty-three-segment "Shoreline Physical, Chemical Fate and Biological Recovery Study," which ran from June 1989 through June 1990.

Signs marking the remaining set-aside sites were removed at the conclusion of the 1991 summer operations, according to NOAA.<sup>131</sup> The identity of those responsible for removal of the markers remains unknown. The result of the removal of the signs is that follow-up visits to the sites are now hampered by difficulties in knowing precisely where the study-site boundaries are.<sup>132</sup>

As the end of FOSC activities in Anchorage neared in 1993, one of the final tasks, and likely the last official FOSC field visit to Prince William Sound, will be to evaluate the set-aside sites. The trustees to the *Exxon Valdez* settlement will then take over their monitoring and would be responsible for treating the sites if a decision is made to do so at the end of the ten-year period.<sup>133</sup>

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127. R. Christophel (G-MER-2), E-mail message to Capt. D. Zawadzki, 27 Dec. 1989, no. W257, FOSC Exxon Valdez Archive.

128. "Agreement to Set Aside Specified Oiled Beaches for Scientific Study" (agreement between USCG, ADEC, and Exxon, Jan. 1990), no. W238, FOSC Exxon Valdez Archive.

129. *Ibid.*

130. NOAA, "Set Aside Sites 1991 Status," 24 July 1991, no. F812, FOSC Exxon Valdez Archive.

131. *Ibid.*

132. Comdr. D. Maguire, conversation with Lt. Comdr. R. Gaunt, 6 May 1993, no. F816, FOSC Exxon Valdez Archive.

133. *Ibid.* A visit to two of these sites by this report's editor in June 1993 left a very clear impression of the effectiveness of oil removal operations at the great majority of treated sites.

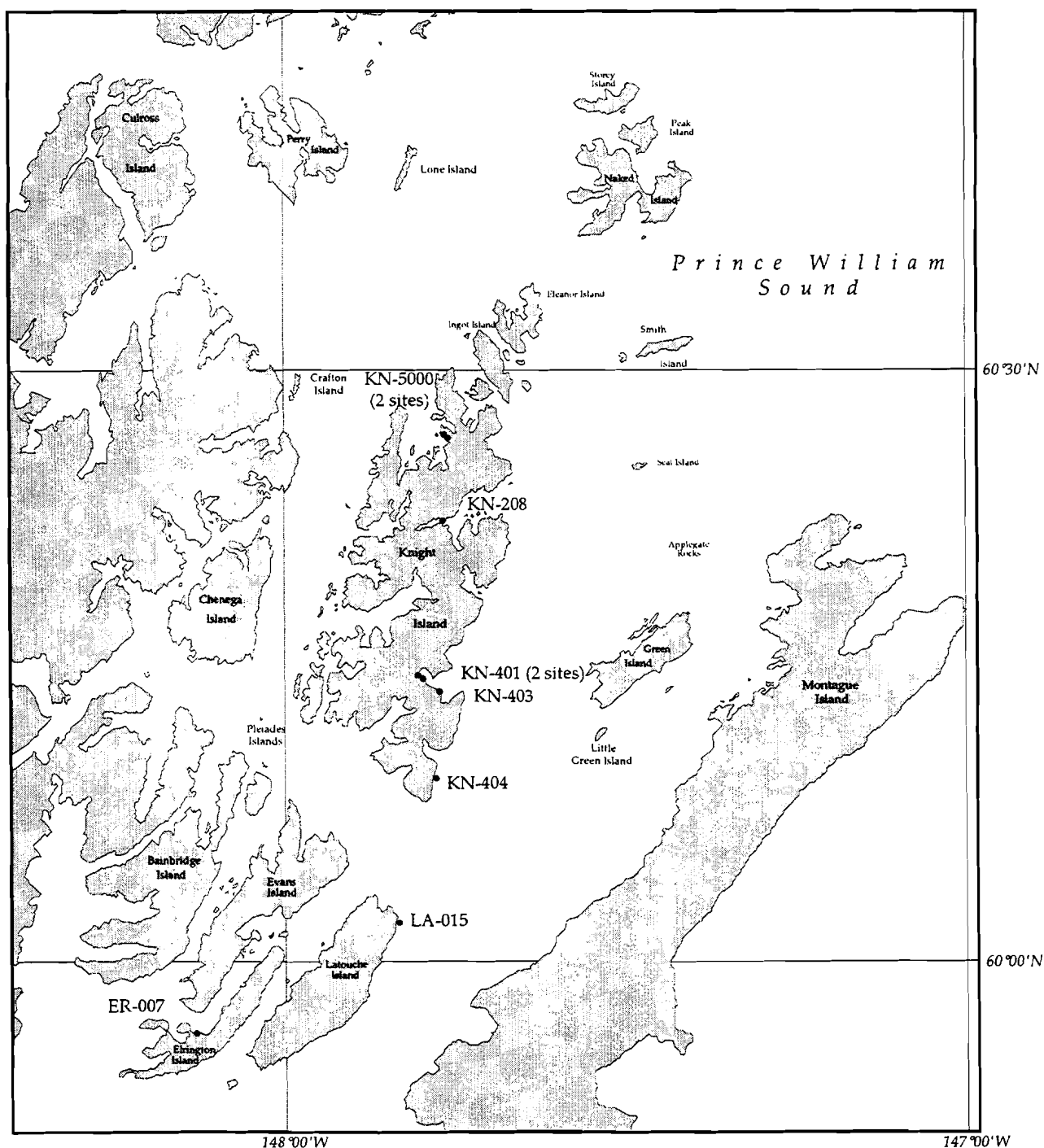


Figure 12.7. Approximate locations of NOAA set-aside sites.

## SUMMARY

The topics covered in this chapter illustrate the range of potential implementation failures and conflicting aspirations, objectives, regulations, and policies that confronted response managers as the shoreline cleanup went forward. Each was bound to appear and reappear, in endless variation and with a range of consequences for the overall

response effort, in a cleanup as vast and complex as that which followed the *Exxon Valdez* spill.

While implementation failures can occur anytime a decision is carried into practice, they could be particularly frustrating when response managers learned after-the-fact that what had happened on the beach was not what they had intended. Cleanup crews occasionally cleaning the wrong sites, treating sites outside of the intended timing windows, or using methods not approved, were some manifestations of this problem. The apparent poor execution of the cleanup at US-10, and the claimed inappropriate execution of the storm berm relocation at LA-20, in each case by crews doing approximately what they were told to do, illustrate the repercussions that higher level decision makers can face if they are failed by crews in the field.

That policies can have a range of impacts, both intended and not, is a phenomenon by no means unique to the *Exxon Valdez* response. The ADEC/ADF&G "zero tolerance" policy on oil contamination of fish catches made both agency representatives and fishermen's groups extremely risk averse about shoreline cleanup efforts that presented risks of even trace contamination to waters in which salmon fisheries occurred. This not only inhibited the choice of cleanup strategies, but conflicted directly with the aspirations of Native groups, who desired that heavily oiled subsistence use areas on their lands be cleaned as completely as possible and before the dates on which hunting traditionally began. While some of these conflicts might have been alleviated by better sequencing of cleanup work, they were not, necessitating extraordinary efforts to both clean the sites and be protective of the fisheries as the work progressed.

The aspirations of state officials that oil be removed completely from areas where they felt it posed a long-term threat to sensitive resources was frequently a source of conflict. The views of agencies like ADF&G were especially problematic for the FOSC when agency statutory responsibilities led their representatives to become advocates for a single objective in situations which others saw as requiring that tradeoffs be made. Much attention was focused on the treatment of anadromous streams as a direct result of the strong advocacy for their protection that came from ADF&G. But ADF&G officials remained unsatisfied to the end that enough had been done to get oil out of areas that they saw as part of the zone of influence on the streams' fishery resources.

In the case of the storm berm relocation project for US-10, differing views on the advisability and necessity of oil removal led to especially polarized preferences on what treatment course to follow and to particularly strident and widely heard debate. The bagging and physical removal option preferred by state officials was viewed as unacceptably costly and impractical by Exxon and unnecessary by NOAA and the Coast Guard. The very high resource values in the area led state officials to be especially vocal in their demands, and the Endangered Species Act ramifications of the cleanup engendered after-the-fact accusations from quarters heretofore silent on the implications of the response effort for the resources under their purview.

The particulars of each case were unique, but the underlying issues were in retrospect to have been expected, given the magnitude of the oiling, the sensitivity of the

environment, and the complexity of the organizational dynamics that developed as the *Exxon Valdez* response unfolded.

## CHAPTER 13. WASTE MANAGEMENT

### OVERVIEW

By its nature oil spill cleanup generates wastes for disposal. In the case of the *Exxon Valdez* oil spill, tremendous amounts and varieties of wastes were created. This necessitated a significant expenditure of personnel, financial, and management resources to ensure that waste management did not become a limiting factor for the cleanup.

Waste management is a complex and integrated process with many intervening steps from the point of waste generation to disposal. Oil skimmed off the water is a case-in-point. The skimmed oil was held in the skimmer's holding tank until transferred to a barge which transported the waste to a shoreside holding facility. The accumulated waste oil was held on shore until there was either sufficient quantity or transport capacity to move the waste to a facility in the lower 48 for reprocessing. Interwoven throughout is a complex set of laws and regulations designed to ensure the safety of workers, the public, and the environment. This chapter details the waste management system that evolved and the issues that influenced that evolution.

### EVOLUTION OF WASTE MANAGEMENT EFFORTS

Under the National Contingency Plan (NCP), the Federal On Scene Coordinator (FOSC) has responsibility to assure that "oil and contaminated materials recovered in cleanup operations shall be disposed of in accordance with Federal regional and Federal local contingency plans."<sup>1</sup> The FOSC is urged (but not required) to identify waste disposal methods and facilities consistent with local and state plans developed under the Resource Conservation and Recovery Act (RCRA).<sup>2</sup> The local waste management plans that existed at the time of the grounding addressed only routine and much smaller-scale incidents than the *Exxon Valdez* spill. The volume of oil discharged into Prince William Sound in March of 1989 quickly exceeded the capacities of the existing waste product contingency planning.<sup>3</sup> Although the state of Alaska was required to designate a disposal site for oily wastes under its own regional contingency plan, it had not done so.<sup>4</sup>

Wastes generated in the *Exxon Valdez* response fell into four major categories: non-oiled solid waste, oily liquid wastes, oily solid refuse, and sanitation wastes (table 13.1).

The handling of these wastes was overseen by federal and state agencies obligated to address the potential impacts on air and water quality of waste handling, storage,

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1. 40 CFR 300.53, 1 July 1988 revision.

2. 40 CFR 300.43, 1 July 1988 revision. RCRA is used here as shorthand for 42 U.S.C., chapter 82, Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act 6901 et seq., sec. 300.43 (a).

3. Comdr. S. McCall, interview by Lt. T. Staats, Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. Comdr. H. Young, Anchorage, 29 July 1991, no. F111, tape, FOSC Exxon Valdez Archive.

4. This issue is further explored in chapter 20, "Response Management Authority."

treatment, and disposal. Multiple agencies were often involved in a single set of decisions. The burning of oiled logs, for instance, required concurrence from U.S. Environmental Protection Agency (EPA) authorities, the Alaska Department of Environmental Conservation (ADEC), and landowners or local land managers. The U.S. Fish and Wildlife Service (FWS), the U.S. Forest Service (FS), the National Park Service (NPS), the Alaska Department of Natural Resources (ADNR), and Native corporations were all involved as land managers.

TABLE 13.1

Waste Products Generated by the Exxon Valdez Spill Response

Waste Category	Types Of Waste Products
Non-oiled solid waste	Household wastes from housing operations Scrap wood and other materials from construction activities
Oily liquid wastes	Recovered oil/water solutions Bilge/ballast water Wash water from boat/equipment cleaning Rainwater, accumulated in storage pits
Oily solid refuse	Used wiping rags and sorbent pads Contaminated clothing Expired wildlife Contaminated fish Oil saturated marine plants Oily logs, sand, and rocks Contaminated beach debris Oil saturated sorbent boom Scrap equipment such as worn out pumps, hoses, boom, etc.
Sanitation wastes	Field generated sewage

Source: Exxon, "Waste Management Scoping Plan," 1 May 1989, no. C1492, FOSC Exxon Valdez Archive.

Setting up a new waste management operation or facility usually requires one or more permits. The submission of a detailed plan is normally required and there is typically an agency review period. The process can be very time consuming. Exxon's cleanup managers regarded the delays they experienced in obtaining permits as very detrimental to mounting a prompt and efficient response. The impediments to securing required permits became a major point of contention in the response.<sup>5</sup>

Following the spill, strategies for the handling and disposal of response-generated wastes were quickly developed. A report provided by Exxon, at the 31 March, Beach

5. R. Dragnich (Exxon), interview by Lt. Comdr. R. Gaunt, Anchorage, 9 Dec. 1991, no. F177, tape, FOSC Exxon Valdez Archive.

Cleanup Methodology meeting, indicated that it had designated a "disposal subcommittee" for the response effort.<sup>6</sup>

When skimmers recovered floating oil, they often filled their storage tanks to capacity and were forced to halt operations until they were provided some means to offload recovered oil. Skimming operations then came to a standstill.<sup>7</sup>

On 15 April (the 23d day of the spill), Exxon delivered its initial shoreline cleanup plan to the FOSC. The plan was judged by the FOSC to lack specifics in several areas, including waste disposal.<sup>8</sup> In addition, it addressed only operations in Prince William Sound, failing to consider needs that were becoming evident in western Alaska. Vice Admiral Robbins, while granting conditional approval of the plan, declared: "You must incorporate a waste management strategy in your plans. Waste management is an important function that must be built into the plan. We all must ensure it never restricts the cleanup effort."<sup>9</sup>

Exxon released a second planning document on 23 April that was oriented towards the western Alaska area. The plan anticipated that: "The primary method of disposal of oily wastes will be incineration....All waste disposal will be conducted in an environmentally acceptable manner and in accordance with State and Federal regulations."<sup>10</sup>

Exxon's "Waste Management Scoping Plan" was released on 1 May 1989. The waste management program was to rely heavily upon use of the Alyeska terminal facilities for separation of oily liquid wastes and for burning combustible materials and by-products. Incinerators, both ashore and afloat, would be used for burn-disposal of combustible solids. The plan envisioned the use of landfill facilities in Valdez and possibly other areas. Temporary storage of waste materials would be provided at approved land sites, and on container barges located in the field.<sup>11</sup>

Projections of the amount of waste materials that would need to be treated during response operations proved to substantially underestimate the amount of waste actually generated (table 13.2).

Exxon's waste management plan was approved by the FOSC on 25 May 1989.<sup>12</sup> Before then, Vice Admiral Robbins had received communications from both ADEC and environmental groups that were critical of Exxon's strategies for dealing with waste problems. Concern was expressed for how incinerator emissions might affect

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6. A. Teal (Exxon), "Beach Cleanup Methodology Meeting," 31 Mar. 1989, no. C202, FOSC Exxon Valdez Archive.

7. This phenomenon is discussed in chapter 3, "Floating Oil Operations."

8. Exxon, "Shoreline Cleanup Execution Plan," 15 Apr. 1989, no. C990, FOSC Exxon Valdez Archive. The document dealt principally with projected manpower/equipment needs and discussion of techniques to be employed. It did not contain a waste products handling section.

9. Vice Adm. C. Robbins, letter to O. Harrison (Exxon), 17 Apr. 1989, no. C625, FOSC Exxon Valdez Archive.

10. Exxon, Shoreline Cleanup Execution and Waste Management Plans, in "Homer Lower Kenai Peninsula Response Plan," 23 Apr. 1989, no. C83, FOSC Exxon Valdez Archive, 13.

11. Exxon, "Waste Management Scoping Plan," 1 May 1989, no. C1492, FOSC Exxon Valdez Archive.

12. Vice Adm. C. Robbins, letter to O. Harrison (Exxon), 25 May 1989, no. C325, FOSC Exxon Valdez Archive.



air quality.<sup>13</sup> Robbins, realizing that an array of agencies would be involved in the processing of waste management permits, declared, "While I ultimately have the responsibility for ensuring all operations meet the appropriate standards, I see the role of the FOSC in waste management primarily as coordinator and expeditor." He noted the importance of prompt processing of permits and pledged to "stay involved in the process" to assure that permit requests were acted upon in an expeditious manner.<sup>14</sup>

TABLE 13.2

## Exxon Valdez 1989 Oiled Waste Recovery

Type	Solid waste (tons)	Liquid waste (bbls)
Exxon Estimated Waste Volume	7,070	341,000
Actual Volume Of Recovered Wastes	33,000*	717,100

*Note:* Oiled solid waste recovered in 1990 amounted to five thousand tons and in 1991 the figure was 700 tons. Figures were not available for 1990–91 liquid waste, but the amounts of oily emulsions recovered after 1989 were termed "insignificant" (R. Dragnich [Exxon], interview by Lt. Comdr. R. Gaunt, Anchorage, 18 Dec. 1991, no. F157, tape, FOSC Exxon Valdez Archive). There were also very small amounts of sewage and wash water products. One hundred tons of oiled solid wastes were recovered in 1992 (USCG, "1992 Work Program Completion Report," Aug. 1992, no. F692, FOSC Exxon Valdez Archive, 8).

\*This figure does not include fish, oiled logs, non-oiled trash, or wildlife carcasses.

## NON-OILED SOLID WASTE

A substantial amount of non-hazardous solid material (debris) was sent to the Valdez city landfill during the summer of 1989. Five to seven years of landfill space was consumed by this waste during the March–September 1989 time period. In order to manage the increased volume of waste products, the city authorized considerable overtime for landfill employees, which was compensated by Exxon.<sup>15</sup> Debris was collected from vessels and work sites in the field, then conveyed to Valdez via barges, and finally trucked to the landfill. Included were scrap accumulated when camps were being constructed (and later dismantled), household refuse, and broken or worn out non-oiled equipment.

Although city authorities in Valdez reported that the impact upon municipal public works activities, including the landfill, was "tremendous" in 1989, public works returned to normal the following year. The effects of cleanup operations upon Valdez public works in 1990 and 1991 were barely noticeable, according to city officials.<sup>16</sup> Public landfills located near Kodiak, Seward, and Homer were also employed for non-hazardous solid material disposal, where no serious problems related to system

13. R. Flint (ADEC), letter to O. Harrison (Exxon), 12 May 1989, no. C103; and S. Libenson (Alaska Center for the Environment), letter to Vice Adm. C. Robbins, 7 May 1989, no. C57, FOSC Exxon Valdez Archive.

14. Robbins, letter to Harrison, 25 May 1989.

15. L. Schlitz (city of Valdez), interview by Lt. Comdr. R. Gaunt, Anchorage, 5 Dec. 1991, no. F156, tape, FOSC Exxon Valdez Archive.

16. Ibid.

capacities arose. Authorities on the Kenai Peninsula feared the possible filling of local landfills, particularly two small unattended sites at Port Graham and English Bay. But those fears proved to be unfounded.<sup>17</sup>

#### OILY LIQUID WASTE

The primary resource for the treatment of oily waste water during the 1989 period was Alyeska's Valdez Pipeline Terminal, where a facility normally used to treat tanker ballast water was employed to process the substantial volume of liquid waste generated during the spill. When the crude oil concentration was high enough, oily liquid waste from skimmers and other collection devices was shipped to out-of-state locations for refinery processing.

*Rainwater.* In locations where bagged oiled refuse was stored while awaiting disposal, particularly at the Valdez barge docking facilities and the Dayville Road incinerator operation, Exxon's contractors were required to devise a means for impounding rainwater. The collected water was then taken to the Alyeska ballast water separator.<sup>18</sup> Since the makeup of the contaminated rainwater resembled ship's ballast, processing was not a problem. Records indicate that approximately forty-six thousand barrels of runoff was brought to Alyeska for processing.<sup>19</sup> Refinable oil was reclaimed when possible. A private contractor handled runoff from bag storage areas at local operations in Anchorage.<sup>20</sup>

*Bilge/Ballast water.* During the 1989 season, 21,500 barrels of oily water were treated at the Alyeska ballast water treatment facility, an amount not appreciably different from that which is handled during a normal year at the terminal. As was the case with recovered refinable skim from the rainwater that was treated at the facility, reclaimed crude was restored to the refining process. After 1989, there was little spill-related effect upon plant operations.<sup>21</sup>

*Wash water.* Cleaning oil contaminated barges and other equipment necessitated the use of a solvent washing process, producing another waste product that needed to be treated. Wash water was impounded and transported to one of two treatment facilities designed to separate toxics from the waste. One of the facilities was based at the Dayville Road processing area in Valdez, the other on a barge (the *Hanalei*), that had originally been commissioned to serve as the base of the popweed cleaning operation (discussed below).<sup>22</sup>

Separation was accomplished through the use of emulsion-breaking chemicals and settling. The water that remained was cycled through the city of Valdez sewage

17. K. Mayer (Kenai Borough landfill coordinator), interview by Lt. Comdr. R. Gaunt, Anchorage, 11 Dec. 1991, no. F161, tape, FOSC Exxon Valdez Archive.

18. R. Dragnich (Exxon), "Waste Management Summary, Exxon Valdez Oil Spill Cleanup," 1 Mar. 1990, sec. 3, no. W1789, FOSC Exxon Valdez Archive, 4.

19. Dragnich, Waste Disposal Summary table, in "Waste Management Summary, Exxon Valdez Oil Spill Cleanup."

20. Dragnich, interview, 9 Dec. 1991.

21. J. Rumels (Alyeska marine supervisor), interview by Lt. Comdr. R. Gaunt, Anchorage, 9 Dec. 1991, no. F162, tape, FOSC Exxon Valdez Archive.

22. Dragnich, interview, 9 Dec. 1991.

treatment plant (without problems, according to public works authorities). Wash water separation processors were decommissioned following the 1989 cleanup.

*Recovered crude solutions.* Approximately 130,000 barrels of oil/water emulsions were recovered by oil skimmers in 1989. These were loaded into barges and transported to Seattle, Washington or to Baytown, Texas for processing. Hopes that the recovered product could be restored to a refinable quality were largely frustrated due to sediment contamination, but it was able to be used as kiln fuel at cement manufacturing plants. In 1990 and again in 1991, liquid oil recoveries were insignificant; what remained of the spill that was in a liquid state was handled principally through the use of sorbents and wiping materials.<sup>23</sup>

#### OILY SOLID REFUSE

In the 1989 response effort, a total of thirty-three thousand tons of oiled solid refuse were produced. Twenty-five thousand tons of bagged refuse were mixed with eight thousand tons of material resembling "kitty litter," added to facilitate handling. Much of the original material consisted of contaminated wiping materials/absorbent devices and oil-saturated clothing. Materials from Prince William Sound were collected in Valdez, then trucked to a center in Anchorage where they were mixed with sorbents and rebagged for barge shipment to Oregon. In addition to refuse, the same center bagged and shipped hundreds of tons of oil-contaminated sand and gravel. Collections from the western Alaska area were prepared in Seward before shipment to Anchorage. Barges moved the wastes collected in Anchorage to the hazardous materials disposal site at Arlington, Oregon.<sup>24</sup>

It was expected that incineration would be the primary disposal method for oily solid wastes. But little incineration occurred during the 1989 summer response. Two incinerator barge vessels, from which significant operations were expected, were plagued with permit and technical problems, and never realized their processing potential.<sup>25</sup> While land-based incinerators consumed an estimated twenty-one hundred tons of refuse, nearly three-fourths of this incineration occurred at Prudhoe Bay.<sup>26</sup> Most of the solid waste was sent to Chemical Waste Management's hazardous waste treatment and disposal facility located in Arlington, Oregon. That facility is one of only two RCRA Part B-permit facilities in the Pacific northwest. (The other is located in Mountain Home, Idaho.) The 40,000 cubic yards (29,300 tons) of waste transported from the *Exxon Valdez* cleanup operation, though a considerable quantity, was not particularly large for the center when compared to some of the firm's other

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23. Ibid.

24. Dragnich, interview, 18 Dec. 1991.

25. The "Seley" incinerator barge was delayed in startup for over two months while awaiting approval for operations. It finally began operations on 31 August. The "AET" barge, because of both permit delays and mechanical problems, burned no refuse at all during the 1989 period, despite being on scene on 22 May.

26. Dragnich, Waste Disposal Summary table, in "Waste Management Summary, Exxon Valdez Oil Spill Cleanup"; and Exxon, "Waste Management/Environmental Report" (part of daily report for 22 June 1989), FOSC Exxon Valdez Daily Archive, 17.

undertakings. Chemical Waste Management authorities reported that their most complex problems involved handling waste products while they were still in Alaska.<sup>27</sup>

More importantly, the oiled materials shipped to Oregon were not technically required to be sent to a hazardous materials disposal facility. The National Contingency Plan specifically excludes "crude oil or any fraction thereof" from the list of hazardous substances defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).<sup>28</sup> The most compelling reason that the hazardous materials site was chosen was that ADEC would not permit the disposal of oiled refuse in Alaska, never having designated the disposal facilities required by the Alaska Regional Contingency Plan. In addition, there were substantial difficulties in obtaining permission from state agencies to incinerate oiled wastes within the response area.<sup>29</sup>

In Valdez, a small-scale solid waste burning center (the Dayville Road facility) was established utilizing three Sureway hospital incinerators. Each had a one thousand pounds per hour capacity. Waste burning operations began at Dayville Road on 30 May. Exxon contends that Dayville's incinerator units were selected principally because they were readily available on short notice from a Seattle supplier. They were to have been used temporarily until larger capacity equipment could be placed in service. But environmentalists contended that placement of the three smaller incinerators was intended to circumvent permit requirements, that would have applied had the combined capacity of the three units been found in a single unit.<sup>30</sup> (ADNR did not require air quality control permits for the Dayville facility.)<sup>31</sup> Once underway, the Dayville Road plant operated throughout the summer months of 1989, after which it was decommissioned (figure 13.1).

The Dayville facility served also as a temporary storage area for bagged oily wastes. Wastes were initially being stored at the Alyeska terminal, raising questions about whether such storage was within the scope of Alyeska's existing waste handling permits. After weighing use of the Alyeska facility and other options for waste storage, ADEC approved the construction of a temporary holding facility at Dayville Road.<sup>32</sup>

Consideration was also given to using a small incinerator plant owned and operated by the city of Whittier for burning combustible wastes. Although application was made for use of the facility, the age, condition, and operational record of the Whittier plant

27. G. Fischer (Chemical Waste Management), telephone conversation with Lt. R. Forgit, 7 Apr. 1993, no. F781, tape, FOSC Exxon Valdez Archive.

28. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), (PL 96-510) sec. 101 (12). The Clean Water Act (33 U.S.C. 1251), defines oil to mean "oil of any kind and in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil [emphasis added]" (33 U.S.C. 1251 et seq., sec. 311 [a][1]).

29. Dragnich, interview, 18 Dec. 1991.

30. Alaska Administrative Code, title 18, sec. 50, part 300 (a)(3); and M. Wenig (Trustees for Alaska), letter to D. Kelso (ADEC), 10 May 1989, sec. 3 (c), no. C76, FOSC Exxon Valdez Archive.

31. Exxon, "Waste Management and Disposal" (part of daily report for 26 May 1989), FOSC Exxon Valdez Daily Archive, 26.

32. Dragnich, "Waste Management Summary, Exxon Valdez Oil Spill Cleanup," sec. 5, 6.

soon led Exxon to abandon this plan. Potential liability appears also to have been a factor in Exxon's decision.<sup>33</sup>

Layout of Dayville Road Waste Handling Site

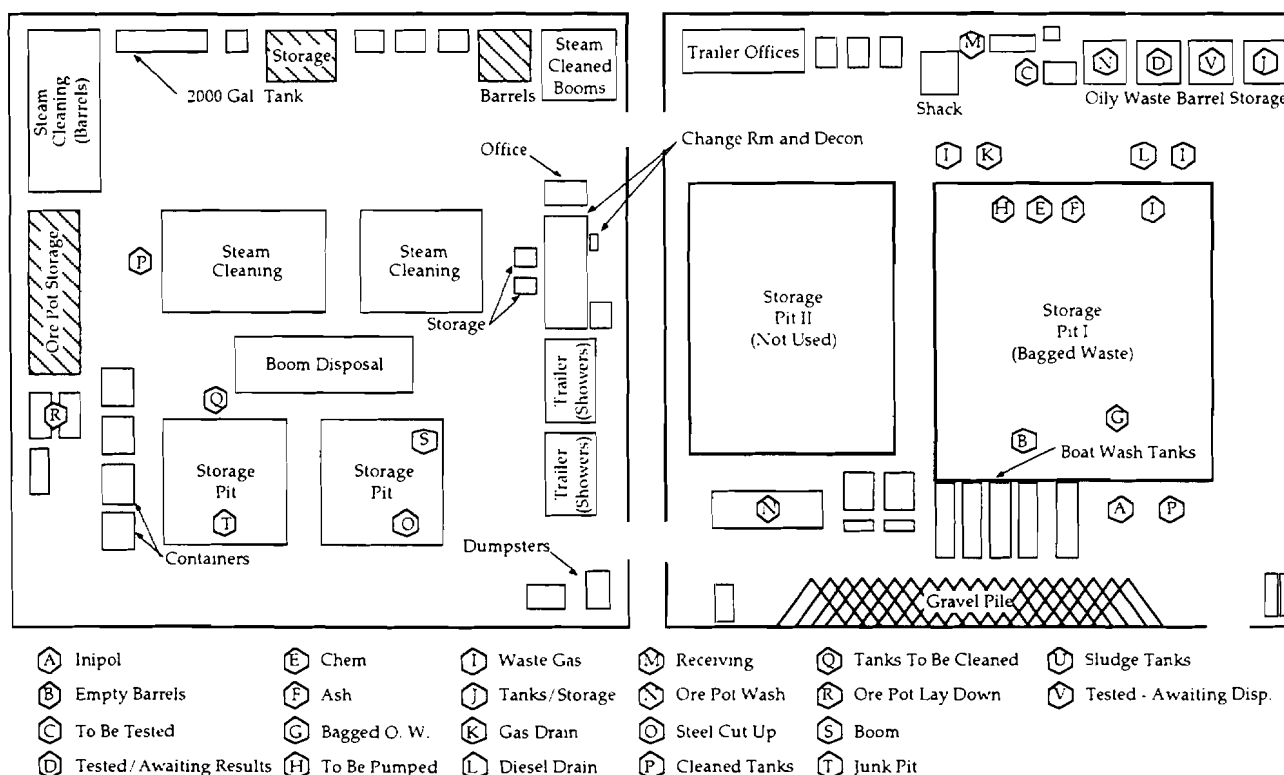


Figure 13.1. Schematic representation of the Dayville Road Waste Handling site in Valdez.  
Source: Reproduced with permission from Exxon Co., USA.

Ultimately, only about 10 percent of the solid waste generated in the 1989 response was incinerated, despite Exxon's attempts to make available considerable land-based and barge-based incinerator capacity. Approximately one-third of the total refuse incineration took place during the month of September. Final approval for use of the Seley incinerator barge (discussed below) substantially increased the capacity to dispose of oiled refuse. Before then, both permit and mechanical delays had prevented any substantial incineration of oily wastes. Waste burning operations were terminated for the season late in September.<sup>34</sup>

The volume of oily waste that was generated in 1989, compared to the following years, serves as an index of the year-to-year level of response activities. The 5,000 tons of such material from 1990 represents only about 15 percent of the previous year's volume, and the 700 ton 1991 total is only 2 percent of what was produced during 1989.<sup>35</sup> In 1992,

33. ADEC, "Waste Management" (part of daily report for 28 June 1989), FOSC Exxon Valdez Daily Archive, 12. See also Wenig, letter to Kelso, 10 May 1989, for additional discussion of the Whittier facility.

34. Dragnich, Solid Wastes Processed table, in "Waste Management Summary, Exxon Valdez Oil Spill Cleanup."

35. Based upon comparison of figures provided in an Exxon report dated 1 Mar. 1990, and others provided by Dragnich (Dragnich, interview, 9 Dec. 1991).

the 100 tons of oily waste that was generated represented just 0.3 percent of the 1989 total (figure 13.2).<sup>36</sup>

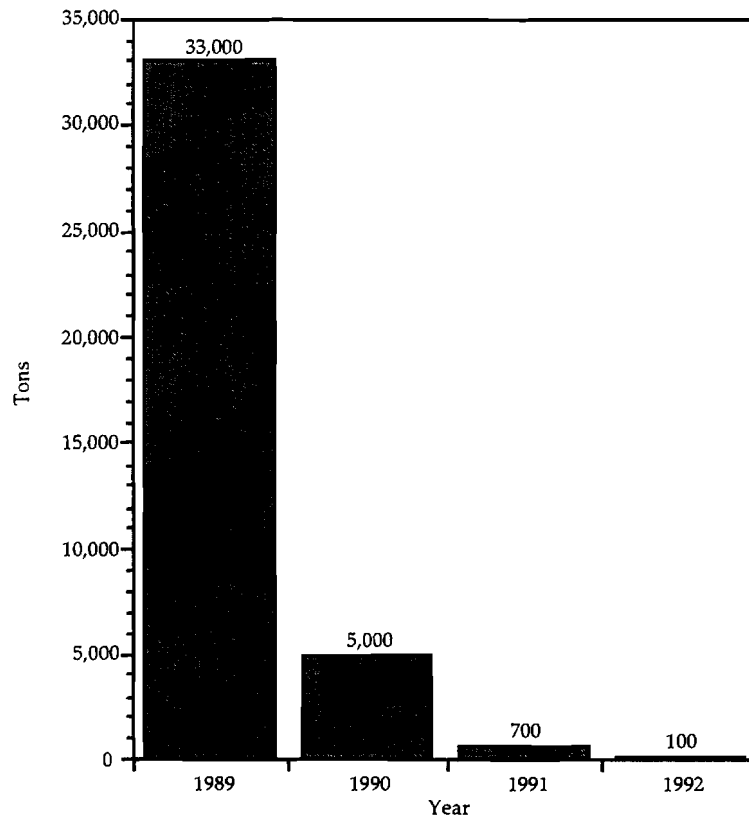


Figure 13.2. Oiled solid refuse collected 1989 to 1992.

*Oiled marine plants.* Both ADEC and Prince William Sound fishermen expressed concerns that commercial fishing gear faced possible contamination as a result of the presence of floating oiled *fucus* ("popweed"), a branched, brown, marine algae. Rafts of oiled kelp had been detected in scattered areas of Prince William Sound, with concentrations north of Naked Island.<sup>37</sup> The National Oceanic and Atmospheric Administration (NOAA), following a study conducted in early May, concluded that these seaweeds represented a potential threat to fishing gear, and recommended that they receive attention in the cleanup.<sup>38</sup>

On 22 May, Exxon forwarded its Oiled Kelp Management Plan to the FOSC. The operation was given the acronym "PROWL" (Popweed Retrieval, Oil Washed, and Loosed). The key ingredient in Exxon's plan was a 242-foot barge (the *Hanalei*), rigged to wash and rinse oil-contaminated seaweeds. In addition, a 180-foot companion hopper-type barge was employed for stowage of the cleaned kelp. Three seine vessels

36. In 1992, ADEC approved a facility in Palmer, Alaska for the processing of oily waste. The plant processed 85 tons of the 100 tons generated in 1992, with the remainder being shipped once again to Chemical Waste Management's hazardous waste facility in Arlington, Oregon (USCG, "1992 Work Program Completion Report," Aug. 1992, no. F692, FOSC Exxon Valdez Archive, 8).

37. USCG, "Distribution of Floating Kelp in Riplines and Windrows" (report from C-130 overflights on 7-8 May 1989, 9 May 1989), FOSC Exxon Valdez Daily Archive.

38. USCG, "Oiled Fucus (popweed) in Prince William Sound," 11 May 1989, no. C712, FOSC Exxon Valdez Archive.

were employed to locate and recover oil-contaminated seaweed, then deliver it to the *Hanalei* for cleaning. The oily wash water produced was shipped to the Alyeska terminal for treatment.<sup>39</sup>

Operations commenced in late June, based initially in the Perry Island area of Prince William Sound. The effort failed to produce more than small amounts of seaweed that needed cleaning, however. After a month in the field, Exxon notified the Alaska Department of Fish and Game that it was relocating operations to the Naked Island area, since it had found that PROWL was being vastly underutilized.<sup>40</sup> The question of how to dispose of "cleaned" popweed had meanwhile become something of an issue, as state authorities wanted cleaned popweed placed back in the environment in the places where it had originally been found, an option Exxon did not consider realistic.<sup>41</sup>

The PROWL operation proved to be short-lived. After only a few weeks of activity, it was evident that the volume of contaminated seaweed that had been expected to be found in Prince William Sound had been overestimated. The *Hanalei* was moved to a location near Valdez where, in August, modifications were begun that would permit the vessel to clean boom and treat wash water.<sup>42</sup> It began to function in its new role on 2 September, and spent the remaining days of the summer season processing liquid wastes.<sup>43</sup>

*Oiled logs.* The shorelines in the response area contain significant numbers of large logs that have accumulated over an extended period of time. Many of these logs became contaminated with oil. The Alaska Department of Environmental Conservation required that oiled logs receive one of three treatment options outlined in an ADNRR plan that had been developed just two weeks before the spill.<sup>44</sup>

The plan's preferred option was to remove the oil and leave the cleaned log in place to avoid destabilization of the beach and adjoining uplands. Failing this, it was recommended that the logs be relocated to where they would not pose a threat to wildlife. If neither of the first options was found to be practical, burning could be used as a last resort, subject to permit conditions. Whatever the option, it was required that log treatment "leave...the beach in a natural appearing condition."<sup>45</sup>

Oiled logs numbered in the thousands, and the average log required mechanical equipment to move it. Furthermore, to remove the logs to another location could require transport over great distances. Warnings from state agencies against the

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39. ADEC, "Waste Management" (part of daily report for 28 June 1989), FOSC Exxon Valdez Daily Archive, 12.

40. A. D. Carpenter (Exxon), letter to J. Brady et al. (ADF&G), 26 July 1989, no. C1143, FOSC Exxon Valdez Archive.

41. Dragnich, interview, 18 Dec. 1991.

42. R. Dragnich (Exxon), telephone conversation with Lt. Comdr. R. Gaunt, 9 Jan. 1992, no. F772, tape, FOSC Exxon Valdez Archive.

43. Exxon, "Waste Management/Environmental Report" (part of daily report for 2 Sept. 1989), FOSC Exxon Valdez Daily Archive, 5.

44. R. B. Thompson (ADNR), letter to R. Bayliss (ADEC), 24 May 1990, no. W1753, FOSC Exxon Valdez Archive.

45. Ibid.

production of “black smoke” during burning compounded the problem of devising a plan to deal with oiled logs.<sup>46</sup>

One early technique involved the use of propane-fueled weed burning devices to burn surface oil from the logs, leaving the log itself intact. This procedure met with ADEC favor, provided it could be accomplished without generating unacceptable levels of “black smoke.” The method preserved the storm buffering effect of the accumulated logs, but it proved to be slow and additional options were needed.<sup>47</sup>

Test burns of piled logs were conducted early in July with positive results. They were subject to rules stipulated by ADEC on the size of fires, safety procedures, and the “black smoke” prohibition.<sup>48</sup> The tests demonstrated that controlled open-air burning could be conducted in an environmentally acceptable manner, and Exxon began (late in July) to employ the procedure.<sup>49</sup> Open-air burning of oiled logs simplified cleanup and allowed for disposal of substantial amounts of otherwise problematic oiled material.

When cleanup operations resumed in 1990, Exxon continued to utilize open-air burning on selected beaches, under the continued scrutiny of ADEC.<sup>50</sup>

*Bird and marine mammal carcasses.* When a decision was made by FWS authorities to retain wildlife carcasses to be used as possible evidence in future litigation, the matter of their disposal became far less a problem than had first been anticipated. The Dayville Road facility, for example, had installed hospital type incinerators, in anticipation of their use for disposal of biological material. For the most part, birds and animals were bagged, frozen, and retained in five freezer trailers located in Anchorage.<sup>51</sup> The FWS finally disposed of these remains in 1992.

The remains of autopsied animals did require disposal. Such services were provided at the Dayville Road center, and later at a private incinerator in Anchorage.<sup>52</sup>

*Contaminated fish.* Early in the organization of the spill response, Exxon established a thirteen-vessel operation to deal with recovery and disposal of the substantial numbers of oiled fish expected to be encountered. Contractors were engaged who would gather contaminated fish into five of the vessels, where they could be processed and disposed of. General fish processor permits were obtained to allow these disposal operations. Most fishing areas were closed during the summer of 1989, however, and very few contaminated fish were found.<sup>53</sup>

46. “Black smoke” was of major concern to the National Park Service, the EPA, environmentalists, as well as to state agencies (S. Provant [ADEC], letter to D. Rachal [Exxon], 5 July 1989, no. C896, FOSC Exxon Valdez Archive). The state of Alaska prohibited the production of black smoke in the burning of certain products, including oily wastes, if it had an adverse effect upon the quality of life (18 Alaska Administrative Code 50.030).

47. S. Provant (ADEC), “Debris Burning: Using of Weed Burners/Open Burning of Logs,” 1 July 1989, no. C759, FOSC Exxon Valdez Archive.

48. Provant, letter to Rachal, 5 July 1989.

49. W. L. Rainey (Exxon), letter to S. Provant (ADEC), 20 July 1989, no. C1021, FOSC Exxon Valdez Archive.

50. Exxon, “1990 General Plan, March Planning Document,” 15 Mar. 1990, sec. 12, 14.

51. Dragnich, interview, 9 Dec. 1991.

52. Ibid.

53. Ibid.



A total of seven loads of contaminated fish, totaling about thirty thousand pounds, was processed. Of these, only one load was clearly shown to have been contaminated by crude oil from the *Exxon Valdez*. Exxon also disposed of thirty-eight thousand pounds of fish that spoiled while awaiting ADEC testing.<sup>54</sup>

No needs arose for disposal of contaminated fish after 1989.<sup>55</sup>

#### SANITATION WASTES

As the number of beach workers and berthing vessels grew, the handling of sewage had to be dealt with. The necessity of gearing up field operations rapidly demanded prompt solutions to sanitation problems. But Exxon's 1 May waste management plan did not include sewage treatment under the assumption that the city of Valdez and other existing sewage systems would adequately serve disposal needs.<sup>56</sup> Subsequent developments suggest that Exxon substantially underrated the scope of the sewage management problem.

During the earliest days of the response effort, barge transport of sewage to the Valdez treatment facility met needs reasonably well. As the number of personnel present in the field grew, however, city officials expressed concerns about increased pressures on the municipal system. It became necessary to seek additional options.

That existing measures were being pressed to the limit became clear when Exxon made an inquiry regarding the feasibility of reducing the number of personnel on U.S. Navy ships to the "minimum essential for ship operations." The sewage load was "taking all available town systems to capacity and rapidly becoming a critical path item," an Exxon official reported.<sup>57</sup> The situation intensified in mid-June when the city of Valdez used its emergency plan to bring its overloaded treatment plant back into compliance with treatment and discharge regulations. One of the city's three lagoons had gone "septic," a condition that occurs when oxygen content drops below the seven parts per million (ppm) level. The city suggested that it might be "forced to begin limiting the volume of sewage being accepted over the City Dock."<sup>58</sup>

At a meeting held on 13 May, authorities discussed bottlenecks occurring in the handling of sanitation waste barges at the Valdez city docks.<sup>59</sup> An aerated treatment lagoon (ATL), a high volume, mobile sewage treatment facility in the form of a floating barge, was proposed as an alternative. Exxon officials expressed concerns that permits for such a facility might prove difficult to obtain, however.<sup>60</sup> The Alaska Department of Environmental Conservation informed Exxon that "engineering drawings signed by an engineer registered in Alaska" would be required for approval of any type of mobile

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54. Dragnich, "Waste Management Summary, Exxon Valdez Oil Spill Cleanup," 1 Mar. 1990, sec. 2, 3.

55. Dragnich, interview, 9 Dec. 1991.

56. Exxon, "Waste Management Scoping Plan," 1 May 1989, sec. 4, 6.

57. E. J. Smith (Exxon), conference call with Capt. Crowe, 12 May 1989, no. C2247, FOSC Exxon Valdez Archive.

58. D. Schiedt (city of Valdez), letter to A. D. Carpenter (Exxon), 16 June 1989, no. C798, FOSC Exxon Valdez Archive.

59. D. Schiedt (city of Valdez), interview by Lt. Comdr. R. Gaunt, Anchorage, 17 Dec. 1991, no. F154, tape, FOSC Exxon Valdez Archive. The backup of barges waiting to unload was due to pumping capacity limitations.

60. R. K. Coleman (Exxon), memorandum to E. J. Smith (Exxon), 14 May 1989, no. C114, FOSC Exxon Valdez Archive. Discussions of sewage with Rear Adm. C. Robbins.

treatment facility. Ocean dumping of sewage into Alaskan waters would not be permitted, and the state recommended against such discharges in areas outside the limits of state jurisdiction as well.<sup>61</sup>

By 15 May, eight vessels were assigned to sewage service operations with two others on standby. Total vessel capacity was just over 300,000 gallons per day. The average daily discharge from field operations amounted to ninety thousand gallons, with the USS *Juneau* and the USS *Ft. McHenry* generating a combined total of about sixty-five thousand gallons of sewage per day.<sup>62</sup>

The Alaska Department of Environmental Conservation also had expressed concerns about the possible cross contamination of water supplies by equipment involved in waste transport.<sup>63</sup> On 19 July, ADEC reported “numerous incidents of drinking water being contaminated by coliform bacteria,” and “unconfirmed reports of illnesses among workers who may have been in contact with the contaminated water systems.”<sup>64</sup>

The ATL barge was ready to begin operations by late July, but the need to secure a National Pollution Discharge Elimination System (NPDES) permit led to additional delays, just as the city of Valdez sewage treatment system was becoming overloaded. Rear Admiral J. W. Kime, serving as acting FOSC (in short-term relief of Vice Admiral Robbins), issued a temporary authorization to begin ATL operations under discretionary authority granted in 40 CFR 122.3 (d), a provision of the NCP that permits waiver of NPDES standards.<sup>65</sup> The EPA had recommended the temporary measure to allow operations while the actual permit was being processed. The ATL was thus able to commence field operations late in June of 1989.

The floating lagoon barge was positioned near Knight Island. The largest berthing vessels, the USS *Juneau* and the USS *Ft. McHenry* (housing a total of approximately 2,500 personnel), were the biggest producers of sewage wastes. The close proximity of the ATL barge substantially reduced the time and traffic associated with the movement of sewage. During its period of operations, the ATL barge treated 260,000 barrels of effluent, about four times the volume that had been transported to Valdez for treatment at the city plant.<sup>66</sup> Approval for the ongoing use of the ATL barge came from ADEC on 25 July.<sup>67</sup>

The combination of ATL barge operations and use of the Valdez city treatment system resulted in a manageable arrangement for the handling of response-generated sewage during the balance of 1989. In July, it became necessary to install additional aeration

61. R. Flint (ADEC), letter to A.D. Carpenter (Exxon), 14 May 1989, no. C115, FOSC Exxon Valdez Archive. This letter addressed the sanitary wastewater plan.

62. R. K. Coleman (Exxon), attachment to letter to Vice Adm. C. Robbins, 16 May 1989, no. C212, FOSC Exxon Valdez Archive.

63. R. Flint (ADEC), letter to A. D. Carpenter (Exxon), 14 May 1989, no. C115; and J. R. Dean, P.E. (ADEC), letter to O. Candies, III (Otto Candies, Inc.), 25 July 1989, no. C1166, FOSC Exxon Valdez Archive.

64. A. D. Ronimus, P.E. (ADEC), letter to P. Defao (Exxon), 19 July 1989, no. C1070, FOSC Exxon Valdez Archive.

65. Rear Adm. J. W. Kime, letter to O. Harrison (Exxon), 24 June 1989, no. C687, FOSC Exxon Valdez Archive.

66. Dragnich, Waste Disposal Summary table, in “Waste Management Summary, Exxon Valdez Oil Spill Cleanup.”

67. W. H. Lamoreaux (ADEC), letter to T. Koonce (Exxon), 25 July 1989, no. C1136, FOSC Exxon Valdez Archive; and NPDES permit no. AK-004966-2 for use of floating sewage treatment barge.

equipment at the Valdez treatment plant, in order to assure compliance with discharge permit conditions.<sup>68</sup> In September, concurrent with the shutdown of cleanup operations, the ATL barge was decommissioned. The sludge aboard the barge was transported to Valdez and processed at the city treatment plant.<sup>69</sup>

Because western Alaska lacked the large numbers of personnel present in Prince William Sound and because workers in western Alaska were not housed in large vessels like the USS *Juneau*, sewage handling there was far less of a problem. Western Alaska vessels were generally equipped with self-contained treatment systems.

When work camps were set up, they were subject to state permitting and inspection. Of particular concern was the assurance of health standards, including sanitation, living conditions, water supplies, and proper handling of waste streams generated by land camp operations.<sup>70</sup>

The reduced scale of operations after 1989 meant that the handling of untreated sewage was not a large-scale problem. In 1990, only two to three barge trips per month were necessary to transport sewage to the city treatment plant, with very little impact upon 1990 operations.<sup>71</sup> Exxon, in its 1990 summer general plan, envisioned no need for permits and/or approvals related to sewage handling. Instead, it was expected that vessels would be "in conformance with USCG regulations," and would adequately serve the needs of future operations.<sup>72</sup>

#### OPERATIONS DURING WINTER 1989–90

When Exxon suspended its shoreline cleanup operations for the winter, state and local authorities and volunteer groups attempted to keep at least oily waste pick-up operations going. In mid-September, Governor Cowper announced that the state would maintain a \$21 million winter operations program that would include continued waste recovery.<sup>73</sup> The state's program did not function as planned, however. According to an *Anchorage Daily News* report, "Confusion, disagreement, and indecisiveness among state officials and local governments on how to fund the program," delayed operations until March.<sup>74</sup>

Exxon refused to support volunteer cleanup programs during the winter months.<sup>75</sup> It did, however, offer to "provide reasonable levels of equipment and waste removal/disposal if requested by the FOSC approval and oversight."<sup>76</sup> Spill-related debris consisting of materials from summer cleanup operations was to be segregated from community generated debris such as plastic bottles, tires, and other trash present

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68. J. R. Dean, P.E. (ADEC), letter to C. Nyman, P.E. (Martech), 12 Sept. 1989, no. C2374, FOSC Exxon Valdez Archive.

69. J. R. Dean, P.E. (ADEC), letter to W. R. Byrd (Exxon), 14 Sept. 1989, no. C2372, FOSC Exxon Valdez Archive.

70. G. Rehfield, P.E. (ADEC), letter to G. Jones (ROEN Associates), 31 July 1989, no. C1330, FOSC Exxon Valdez Archive.

71. Schiedt, interview, 17 Dec. 1991.

72. Exxon, "1990 General Plan, March Planning Document," sec. 12, 15.

73. S. Cowper (governor of Alaska), "Cowper Unveils Five-Part State Winter Cleanup Plan" (press release no. 89-150, 15 Sept. 1989), no. C2308, FOSC Exxon Valdez Archive.

74. C. Wohlforth, "State Halts Community Cleanup Program," *Anchorage Daily News*, 28 Apr. 1990.

75. Exxon, "Summary of Exxon's Position: Volunteer Programs," no. W449, FOSC Exxon Valdez Archive.

76. Ibid.

on shorelines, but not due to the spill). Exxon would collect the former for disposal at facilities in Valdez or Seward, but community debris would have to be delivered to "an appropriate community disposal facility." Exxon's winter debris collection program included a number of precautions designed to ensure the safety of those involved in recovering materials from the shorelines.<sup>77</sup>

At a December 1989 Operations Steering Committee meeting, Exxon officials restated their position that, while the company would pick up refuse that had been generated by its own cleanup activities, it did not wish to encourage other parties' cleanup efforts in view of safety concerns. Rear Admiral Ciancaglini supported Exxon, reminding all parties that the ground rules for collection of debris during the winter had been set months earlier. He stated that anyone engaging in winter shoreline cleanup activities would need to assume responsibility for disposal of whatever waste was generated.<sup>78</sup>

Volunteer groups, acting in cooperation with state and/or local agencies, nevertheless collected wastes for disposal during cleanup efforts they organized in the winter of 1989-90. A group organized by the Prince William Sound Conservation Alliance (PWSCA), and consisting of twenty-six volunteers, labored through late March, recovering 23 barrels of oiled debris and 113 bags of non-oiled refuse. In addition, the remains of three sea otters and a bald eagle were recovered by the group.

A "bounty bag" program (the "Adopt-a-Beach" program) was instituted at Kodiak Island under the auspices of the Kodiak Environmental Cleanup Effort (KECE). The program provided cash incentives, paying collectors \$8.00 per pound for "pure mousse," and \$0.50 per pound for oiled sand and gravel.<sup>79</sup> Funding for the program was reportedly furnished through a grant from Kodiak Borough.<sup>80</sup> The project generated substantial amounts of waste (twelve thousand pounds, according to one report), but found itself without a way to dispose of the recovered material.<sup>81</sup> Non-spill related refuse likely inflated the recovery totals of volunteer cleanup crews, since they did not follow the guidelines of Exxon's contractors when collecting refuse.<sup>82</sup>

Exxon continued to decline overtures from volunteer groups that it pick up refuse from winter cleanup projects. To have provided such a service would have given the appearance of sanction to efforts that the company did not wish to encourage, according to a spokesman.<sup>83</sup> The bounty bag program, therefore, engaged local vessels to collect and transport bagged oily matter. When the Coast Guard claimed that the arrangement involved U.S.C. Title 46 violations (governing the transport of freight), KECE claimed

77. Exxon, "Operations Plan, Exxon Winter Operations Debris Collection Program," 22 Nov. 1989, no. W795, FOSC Exxon Valdez Archive.

78. USCG, "Operations Steering Committee" (summary of Operations Steering Committee meetings, 12 Dec. 1989), no. W412, FOSC Exxon Valdez Archive.

79. R. Voley, "Mayors Say Bounty Bag Program Bad For Villages," *Kodiak Daily Mirror*, 15 Nov. 1989.

80. L. Hughes (KECE), letter to Adm. P. Yost, 24 Oct. 1989, no. W54, FOSC Exxon Valdez Archive. The letter, very critical of Coast Guard participation in the response, was later repudiated by the president of KECE who informed the Coast Guard that Ms. Hughes was no longer associated with the organization, and had no authority to serve as a spokesperson on its behalf.

81. J. Peavey (Exxon), letter to J. Selby (Kodiak Island Borough), 18 Jan. 1990, no. W322, FOSC Exxon Valdez Archive.

82. R. Dragnich (Exxon), interview by Lt. Comdr. R. Gaunt, Anchorage, 13 Jan. 1992, no. F774, FOSC Exxon Valdez Archive.

83. Ibid.

harassment and sought to have the Coast Guard-imposed requirements set aside.<sup>84</sup> Although Exxon restated its position that it has never “supported, nor assumed responsibility for the KECE collection program,” an Exxon vessel nevertheless took custody of KECE collected refuse on 30 January.<sup>85</sup>

Native-led, small-scale waste recovery activities also took place during the 1989–90 winter period. Residents of several villages were furnished with supplies for these operations by Exxon. Because these projects had been sanctioned by Exxon, arrangements were made to furnish waste containers to the villages, and to make periodic collection of the recovered materials.<sup>86</sup>

### PERMIT ISSUES

How wastes were handled was dictated to a large degree by the necessity of obtaining permits demonstrating compliance with federal and state statutory requirements. While it may have been desirable for those permits to be expedited, state authorities were adamant that what was already a crisis must not be allowed to worsen through the granting of ill-considered waivers, or through the diminution of standards. Exxon, on the other hand, maintained that the response might have been improved had there been a more cooperative effort by local, state, and federal agencies, particularly in the granting of waivers. Exxon had “brought in experienced engineering/waste management personnel to ensure the practices were sound and practical,” Exxon officials maintained. Nonetheless, there were significant delays and adverse cost impacts due to unnecessary regulatory reviews, in the company’s view. “Although, we were operating in a major emergency, waste management issues were often treated as routine and without the necessary sense of urgency,” wrote Exxon waste management operations head, Robert Dragnich.<sup>87</sup>

The matter of permits for incinerator barges especially frustrated Exxon’s cleanup plans. Having very little incineration capacity at onshore locations, Exxon had counted on barge-based operations to handle large volumes of waste materials. These wastes were being shipped to distant locations while approval was awaited. Two barges procured by Exxon sat idle while state authorities held a thirty-day public comment period before issuing final approval.<sup>88</sup>

The first of the incinerator barges was the Seley “silo” incinerator barge. Initially proposed as a part of Exxon’s May waste scoping plan, the unit consisted of a large burner (five to seven tons per hour capacity) mounted on a 312 ft. x 68 ft. deck barge.<sup>89</sup> Despite initial hopes to begin Seley barge operations on 10 June, the vessel arrived in Valdez nearly two weeks later. Seventy-one days later, on 31 August, the Seley barge, then located in Herring Bay, was finally able to commence operations. The process of

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84. D. Stockdell (KECE), letter to Senator T. Stevens (Alaska), 15 Nov. 1989, no. W244, FOSC Exxon Valdez Archive.

85. Peavey, letter to Selby, 18 Jan. 1990.

86. Dragnich, interview, 13 Jan. 1992.

87. R. Dragnich (Exxon), letter to Comdr. T. Sampson, 1 Mar. 1990, no. W1789, FOSC Exxon Valdez Archive.

88. Dragnich, interview, 18 Dec. 1991.

89. Exxon, “Waste Management Scoping Plan,” sec. 5, 13.

final approval for its air quality control permits consumed ninety-nine days.<sup>90</sup> Following three weeks of service in Prince William Sound, during which it incinerated only 481 tons of oiled wastes, the Seley barge moved to Valdez. On 21 September, it was decommissioned and returned to the Seley Corporation.<sup>91</sup>

The other incinerator barge was provided by Advanced Environmental Technology (hence called AET barge). Rigged with a multi-burner rotary kiln system, the AET barge was expected to consume five tons of refuse per hour. It was located at Viekoda Bay, on the northwest side of Kodiak Island, in the hope that it might consume a large volume of western Alaska-generated wastes.<sup>92</sup> The vessel arrived from Seattle on 26 June, but didn't receive a permit to operate until 4 August. It soon suffered primary incinerator chamber problems, and then the revocation of its permit, which had been "improperly issued."<sup>93</sup> On 8 September, Exxon abandoned hopes to employ the AET barge, ended the AET contract, and sent the vessel back to its owner. During the several weeks of AET barge presence in the response area, it accomplished no refuse incineration whatsoever.<sup>94</sup>

Community concerns appear to have influenced the fate of the AET barge. The FOSC made a trip to the Kodiak area when it was still expected that the vessel would operate there. He found (in Port Lions) a community that was deathly afraid of and opposed to the incinerator, as he recalled in a later interview.<sup>95</sup> Community members were especially fearful of dioxins. Despite efforts to calm these fears, village residents would not accept the idea of having the barge in their locale. When a decision was made to place the vessel at Viekoda Bay (away from Port Lions), there was a similar reaction from Native Alaskans in that area. In Admiral Ciancaglini's view, it was the inability to overcome local community opposition led to Exxon's decision to cancel the AET barge project. In the meantime, the bill for the AET barge project had totaled \$5 million.<sup>96</sup>

The director of Exxon's waste management operations observed in his 1989 disposal activities report that, "Throughout this effort, the USCG was cognizant and supportive of Exxon's efforts but appeared to have little authority to assist in implementation of them." He continued, "I believe it's important that a single entity, such as the USCG, have the lead responsibility and exercise associated authority to direct the overall effort in future oil spills."<sup>97</sup>

90. The initial date of the air quality control permit request was 24 May 1989.

91. Exxon, "Waste Management/Environmental Report" (part of daily report for 19 Sept. 1989), FOSC Exxon Valdez Daily Archive, 9.

92. ADEC, Air Quality Control Permit to Operate (no. 8924-AA002), 4 Aug. 1989.

93. Exxon, "Waste Management/Environmental Report" (part of daily report for 1 Sept. 1989), FOSC Exxon Valdez Daily Archive, 5. The improper issue was related to a failure by ADEC, to properly involve the Kodiak Island Borough (as was required by state statute) in the permit decision.

94. Exxon, "Waste Management/Environmental Report" (part of daily report for 9 Sept. 1989), FOSC Exxon Valdez Daily Archive, 5.

95. Rear Adm. D. E. Ciancaglini and Vice Adm. C. E. Robbins, interview by Dr. T. Leschine (FOSC staff), Comdr. D. Maguire, and Lt. Comdr. R. Gaunt, Anchorage, 10 Sept. 1991, no. F106, tape, FOSC Exxon Valdez Archive.

96. *Ibid.*

97. Dragnich, letter to Sampson, 1 Mar. 1990.

## 1992 DEVELOPMENTS

After three years of comparatively difficult and costly operations, 1992 waste management proved to be relatively straightforward. An alternative was finally found that permitted oily wastes to be handled in Alaska, thus finally eliminating the costly transport to the toxic waste disposal site in Oregon, which had previously been used. The cost of shipping waste to Oregon, estimated at \$950 per ton for 1992, could now be reduced to \$640 per ton.<sup>98</sup>

In May, ADEC reviewed a waste processing system offered by Alaska Pollution Control, Inc., based in Palmer. The system there was described as being "like a distiller," in that it heated (to 850°F) the contents of a rotating drum, driving off vapors that are then captured by a recovery device, and burned. Approval for use of the system was given by ADEC in June, and the treatment of approximately one hundred tons of oily waste then followed. A net cost savings of about \$30,000 was realized.<sup>99</sup>

Had it been possible for this new technology to deal with the more than thirty-five thousand tons of oily waste that had been collected during the previous three years, the cost savings might have approached \$11 million, and space at the Oregon RCRA-approved waste disposal site would not have had to be filled.

## SUMMARY

In the judgment of Vice Admiral Robbins, Exxon is part of an industry that is highly permit-oriented. The mindset that Exxon brought to the response, therefore, may have produced an "overreaction" when permit-related questions arose.<sup>100</sup> It is also possible that Exxon's behavior was influenced by legal considerations. Sources within both ADEC and the Coast Guard at times expressed the view that Exxon operated in a manner that was calculated to prevent exposure to additional risk of litigation.<sup>101</sup> Shutting down operations in the face of official challenges may have been a means of taking no chances, thereby avoiding additional lawsuits and charges of damages through ill-considered action.

Exxon officials felt that ADEC often imposed unreasonable restrictions upon cleanup operations. Log burning was prohibited for a considerable period of time, for example, while Exxon repeatedly pointed out that open burning of oiled logs and driftwood had been used in previous spills. The company believed that it was being subjected to standards that exceeded those applied to others, and that special criteria had been developed specifically to impede its operations.<sup>102</sup>

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98. N. Phillips, "Swabbed Oil Stays in Alaska," *Anchorage Daily News*, 2 July 1992, sec. B.

99. Ibid.

100. Rear Adm. D. E. Ciancaglini and Vice Adm. C. E. Robbins, interview by Dr. T. Leschine et al.

101. Rear Adm. E. Nelson, telephone conversation with Lt. Comdr. R. Gaunt, 15 Aug. 1991, no. F176, notes; and E. Piper (ADEC), telephone conversation with Lt. Comdr. R. Gaunt, Anchorage, 15 Jan. 1992, no. F765, notes, FOSC Exxon Valdez Archive.

102. Dragnich, "Waste Management Summary, Exxon Valdez Oil Spill Cleanup," sec. 5, 6-7.

Exxon found many reasons to be critical of ADEC, and often found itself in an adversarial relationship with ADEC and other state agencies. On the other hand, Ernie Piper (a former state OSC and Governor Cowper's public affairs officer in 1989–90) felt that Exxon's technicians and managers brought too strong an engineering orientation to the cleanup. Once an efficient way to resolve a problem was identified, they tried to move toward implementation as quickly as possible. This goal orientation left little patience for what were regarded as delaying tactics, and there was little understanding of the perspective of government agencies.<sup>103</sup>

While Exxon and its contractors operated from a cost-control and task-completion orientation, ADEC, emphasized Piper, was forced to react to pressures brought by an angry and sometimes frightened public. In at least some cases where Exxon wished to move quickly, Commissioner Kelso and members of his staff appeared to be under substantial pressure to provide assurances that the proposed action would not cause environmental harm or other damage to public interests.

Exxon might have done a much better job at "risk communication," according to Piper. When citizens were motivated by falsely based fears, they reacted by demanding government intervention and protection. Had Exxon and other organizations found ways to anticipate and calm such anxieties, these episodes might have been minimized. In reflecting upon the adversarial relationships existing between Exxon and a number of governmental agencies, Piper suggested, "Probably...we (ADEC) did not understand Exxon and Exxon did not understand us."<sup>104</sup>

Waste disposal was most critical during the early days of floating oil operations when the inability to collect recovered oil from skimmers, in a timely manner, further eroded the ability of the skimmer fleet that could be mustered to attack the massive spill. But the failure of the response organizations to agree upon waste management strategies, and to expedite permits, introduced delays and inefficiencies throughout the cleanup, particularly in 1989. A "one-stop shopping" approach to permitting, and authority sufficient to expedite the granting of permits, needs to be considered for future spills of national significance. The legitimate concerns of state and local authorities charged with protecting the environment and public welfare also need to be respected. It may not be possible to satisfy completely the desires of efficiency-minded response managers in light of this, but a more explicit consideration of the problem of waste disposal than provided at present by the NCP appears to be warranted.<sup>105</sup> Nevertheless, while it is clear that waste management problems caused delays in some aspects of operations, and cost Exxon a great deal of money, it is not clear that they had a significant detrimental impact on the overall conduct of cleanup operations.

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103. Piper, interview, 15 Jan. 1992.

104. Piper, interview, 15 Jan. 1992.

105. This point is further pursued in chapter 20, "Response Management Authority."





## CHAPTER 14. WILDLIFE RESCUE AND REHABILITATION

### OVERVIEW

During the *Exxon Valdez* oil spill, media and public attention focused extensively on the impact of oil on wildlife. Images of oiled wildlife dominated news coverage, particularly during the first weeks of the spill. In response to what was deemed a major threat to the affected area's rich wildlife resources, a major rescue and rehabilitation program was organized. During the spring and summer months, hundreds of individuals, many of them volunteers, worked to recover and rehabilitate the wildlife casualties of the spill. This chapter describes those efforts, in which the Federal On Scene Coordinator (FOSC) played primarily a supporting role.

### THE NCP AND WILDLIFE CONSERVATION FOLLOWING OIL SPILLS

Section 300.53 of the National Contingency Plan (Containment, Countermeasures, Cleanup, and Disposal), states that "chosen methods [of cleanup] should be the most consistent with protecting the public health and welfare and the environment," including "the ocean waters of which the natural resources are under the exclusive management authority of the United States."<sup>1</sup> Under section 300.57, the Department of the Interior (DOI) representative to the Regional Response Team (RRT) has responsibility for wildlife conservation. The DOI representative in the case of the *Exxon Valdez* was the U.S. Fish and Wildlife Service (FWS), which had a significant role in the wildlife rescue and rehabilitation component of the response. The Fish and Wildlife Service undertook a major effort in response to the *Exxon Valdez* spill. This was essential given the vast area affected by the spill (which included some national wildlife refuge lands), the sensitivity of the affected environment and species to oil, and the volume of the oil spilled. According to Jill Parker of FWS, "The Service's [FWS] role is to provide the Regional Response Team...with recommendations on fish and wildlife resources; oversee the rescue and rehabilitation of wildlife; and document the environmental damage caused by the spill."<sup>2</sup>

### EVOLUTION OF THE RESCUE EFFORT

Six hours after the grounding of the *Exxon Valdez*, officials from Alyeska Pipeline Corporation called the International Bird Rescue Research Center (IBRRC) of Berkeley, California. An Alyeska official reported, "I think we have had the big one here today, and you need to get your team together and get here as soon as possible."<sup>3</sup> The center was founded in 1971 as part of the response to a spill in the San Francisco area, and is

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1. 40 CFR 300.53 (b); 40 CFR 300.6.

2. J. Parker, "U.S. Fish and Wildlife Service Response Activities Following the Exxon Valdez Oil Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 243.

3. M. Wood and N. Heaphy, "Rehabilitation of Oiled Seabirds and Bald Eagles Following the Exxon Valdez Oil Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 235.

now considered the leading authority in the rescue and rehabilitation of oiled seabirds. Since 1975, IBRRC had been under contract to Alyeska to provide expertise in the event of an oil spill. Members of the IBRRC staff arrived in Valdez on 25 March 1989.<sup>4</sup>

Copper Basin Hall at Prince William Sound Community College in Valdez was chosen as the center for treatment and rehabilitation of rescued birds. Although the building lacked certain basic needs (such as proper ventilation and a good water supply) it was judged to be large enough to support a bird population of five hundred.<sup>5</sup> The center began operations on 31 March 1989.

The FWS dispatched a response management coordinator to Valdez on the first day. Two days later, four additional FWS personnel arrived and began assessing the extent of damages to the migratory bird and sea otter populations of the sound. As the federal authority for wildlife rescue operations, FWS began monitoring IBRRC activities.<sup>6</sup> By 29 March, the FWS had fourteen employees in the Prince William Sound area (concentrated in Valdez).

On 25 March, Exxon and DOI contacted Sea World Research Institute in San Diego and requested assistance in setting up an otter rehabilitation center in Valdez. Marine mammal specialists were recruited from throughout North America. Initially, the center shared facilities with the bird rehabilitation center, but soon moved to larger confines at the Growden-Harrison Complex of the Prince William Sound Community College.<sup>7</sup> Most of the volunteers employed to develop the center eventually were placed on the payroll, helping maintain operational continuity.

A fleet consisting initially of five fishing vessels was employed to rescue oiled wildlife. The vessels were crewed by Alaskans experienced in navigating Prince William Sound. Three members of the IBRRC staff directed operations.<sup>8</sup> The vessels worked in conjunction with overflight crews to minimize the danger of operating in the unpredictable weather typical of Prince William Sound at that time of year.

Measures were also taken to protect the large number of migratory birds that passed through the area shortly after the spill. Birds were discouraged from landing in heavily oiled areas through hazing techniques, including the use of scarecrows, shotgun cracker shells, and mechanical devices. The FWS, in the meantime, tried to minimize disturbance of unoiled areas of the sound so they might be used by the birds displaced from the oiled areas. The Federal Aviation Administration (FAA) issued notices that directed aircraft to avoid areas that migratory birds might use. When birds migrated through the area during the fall, conditions had improved enough to make such measures unnecessary.<sup>9</sup>

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4. T. Monahan and A. Maki, "The Exxon Valdez 1989 Wildlife Rescue and Rehabilitation Program," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 131.

5. J. Holcomb, "Overview of Bird Search and Rescue and Response Efforts During the Exxon Valdez Oil Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 225.

6. Parker, 243.

7. Monahan and Maki, 133.

8. Holcomb, 225.

9. Parker, 244.

The bird rescue center in Valdez was the first to open. As the oil spread into western Alaska, facilities were established in that area. In early April, two additional centers were opened by Exxon and IBRRC: one at an empty warehouse in Seward, and another at the National Guard armory in Kodiak. Homer area residents opened a bird holding facility with IBRRC serving in an advisory role. Officials from IBRRC felt the Homer center was not particularly necessary, since the Seward center was only a few hours away by car. "Panicked" local residents foresaw a much higher toll in oil-impacted wildlife than ever materialized.<sup>10</sup> During the period that all four centers were operating, FWS made daily conference calls to keep supervisors apprised of activity levels in each of the zones.<sup>11</sup>

The peak period for bird and otter rescue activity at the Valdez center occurred during the earliest weeks of the spill. After 1 May, activity declined significantly, and the Valdez center was closed on 21 July as part of a plan to centralize rescue operations in Seward.<sup>12</sup> The Kodiak center was closed on 3 July, and the holding facility at Homer was shut down on 30 July. Arrangements were made at each location for temporary care until oiled wildlife could be sent to Seward. Rescue boats operated in the western Alaska area through early September, with the collected birds and otters sent to the rehabilitation center in Seward.<sup>13</sup> Each of these changes was subject to FWS approval.

## VOLUNTEERS

The National Contingency Plan (NCP) establishes procedures for the participation of "other persons" in response actions.<sup>14</sup> With respect to wildlife issues, this brought FOSC involvement in a number of politically sensitive questions related to volunteer help. The NCP (40 CFR 300.57) provides that, "The DOI representatives and State liaison to the RRT shall arrange for the coordination of professional and volunteer groups permitted and trained to participate in waterfowl dispersal, collection, cleaning, rehabilitation, and recovery activities (consistent with 16 U.S.C. 703 through 712 [sections related to the capture, handling, and protection of migratory bird species] and applicable State laws)."<sup>15</sup>

A primary consideration for the FOSC concerned the use of volunteer workers for assistance with wildlife rescue and rehabilitation operations. While it might seem that a project the size of the *Exxon Valdez* cleanup could use all of the help available, the use of volunteers had ramifications in a number of other areas. For a variety of reasons, Exxon preferred to have employees, rather than volunteers, performing actual cleanup work. It was found that volunteers were not as dependable as paid workers. As a result, except in the case of the Seward bird rehabilitation facility, volunteer

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10. Holcomb, 227.

11. Parker, 243.

12. Holcomb, 226.

13. *Ibid.*, 226–27.

14. 40 CFR 300.55, 8 Mar. 1980.

15. 40 CFR 300.57.

positions either became paid appointments or were done away with.<sup>16</sup> In the view of Tom Monahan, spokesman for Exxon's wildlife rescue program, the relationship between employers and employees permits more efficient direction of tasks than does the association between sponsors and volunteers. The liability responsibilities of the employer are clearer, and the employer can maintain control of training, work rules, and work assignments. For these reasons volunteers were limited in opportunity.<sup>17</sup>

The authority of an FOSC to accept volunteer services is conditioned by statutes intended to protect the federal government from liability for compensation claims.<sup>18</sup> Generally compensated volunteers may not be accepted for governmental services except in dire circumstances.<sup>19</sup> Volunteer services (compensated) are distinguished from gratuitous services (uncompensated). While the FOSC is not prohibited from accepting gratuitous services, in the process of doing so questions related to government liability for injuries to workers, or for harms that workers may cause, are raised.<sup>20</sup>

Utilization of gratuitous workers exposes the federal government to potential liability obligations outlined in the Federal Employees Compensation Act (FECA) and the Federal Tort Claims Act (FTCA). Where the statutory authorization to accept volunteer services is unclear or where the services are gratuitous, FECA coverage is not available. Under FTCA, government liability is limited to cases where the party seeking recovery can establish that the injury, death, or loss was caused by some act of negligence or omission by a government employee acting within the scope of employment. In the event that an FOSC is found to be acting out of scope of authority in a matter involving an injured volunteer worker, he or she may face personal liability, according to a provision of the FTCA.<sup>21</sup> Thus the FOSC is obligated to ensure that individuals providing gratuitous services are afforded the protections that are stipulated by the NCP.

## TREATMENT OF WILDLIFE

Wildlife treatment focused on these categories of animals: marine birds, bald eagles, and sea otters. Other marine mammals were found to be better off left in the environment.

### MARINE BIRDS

Birds suffer both physical injury and stress when oiled. The inability to maintain buoyancy, and the rapid drop in body temperature due to destruction of the insulating

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16. T. Monahan (Exxon), interview by Lt. Comdr. R. Gaunt, Anchorage, 10 Apr. 1992, no. F669, tape, FOSC Exxon Valdez Archive.

17. Ibid.

18. R. E. Spears et al., "Volunteers at Oil Spill Cleanups: Guidance for On Scene Coordinators," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 161-62.

19. 31 U.S.C. 1342 et seq.

20. Spears et al., 161-62.

21. Federal Employees Compensation Act (FECA); 5 U.S.C. 1801 et seq. and Federal Tort Claims Act (FTCA); 28 U.S.C. 2671 et seq.

properties of feathers, are major causes of mortality. Similarly, the trauma of being captured, handled, and brought to unfamiliar surroundings is also a major cause of mortality. One Seward rescue worker spoke of rescued birds frequently dying in her hands, the apparent victims of heart failure.<sup>22</sup>

New arrivals were individually evaluated as they reached the centers. First priorities involved ensuring that heavy oil was removed, that the mouth, nose, and eyes of the bird were clear, that there were no broken bones or other physical damage, and that there was no evidence of ingestion of oil. Temperatures were checked, and if necessary, a procedure was employed to gently restore the new arrival to normal temperature ranges. To minimize stress, birds that appeared to be reasonably stable were placed in darkened areas for rest before being moved to the cleansing area.<sup>23</sup>

Washing can also be extremely stressful for oiled birds. It was not attempted until the animal had stabilized enough to endure the process. It often took as long as forty-five minutes to complete the soap and water cleaning of a single bird. *Dove*<sup>TM</sup> dishwashing detergent was an effective agent for breaking down oily residues. Care was taken to ensure that an effective rinsing had taken place, and newly laundered birds were dried with commercial pet warmers.<sup>24</sup>

Birds were tested for buoyancy and waterproofing, typically for at least two days, prior to release. Choosing proper release sites for rehabilitated birds also needed careful consideration, since the wrong location could result in rapid reoiling. Unfortunately, birds could not be kept in captivity for extended periods of time without new problems developing (spread of communicable diseases or degeneration due to inactivity, for example).<sup>25</sup>

#### BALD EAGLES

Because bald eagles are listed as an endangered species, their fate following the spill was of special concern. In addition to facing the danger of direct contact with oil while hunting, bald eagles, which are also efficient scavengers, were vulnerable to harm from ingesting oiled wildlife found on shorelines.

During the month of April, when the worst effects of the spill were seen on Prince William Sound wildlife, several bald eagles were brought to the Valdez bird rescue center. Most were subsequently sent to an Anchorage veterinarian for treatment. In late May, following requests by the FWS, Exxon set up an eagle treatment center at Seward with four 10 ft. x 10 ft. x 6 ft. indoor enclosures.<sup>26</sup> Holding areas at Valdez and Kodiak accommodated eagles awaiting transport to Seward.<sup>27</sup>

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22. B. Brease (volunteer at Seward Bird Rescue Center), letter to W. Soroka (FWS), 8 May 1989, no. C2053, FOSC Exxon Valdez Archive.

23. Wood and Heaphy, 237.

24. *Ibid.*

25. *Ibid.*, 237–38.

26. Monahan and Maki, 134.

27. Wood and Heaphy, 238.

Eagle collection teams consisted of one dedicated boat and one dedicated aircraft in both Prince William Sound and western Alaska. Capture teams operated from late May through mid-August, successfully catching 114 eagles during that period. Many (ninety-eight) of these were examined and released immediately. In addition, members of the general public caught twenty-three others, principally in the Kodiak area. Of the eagles that were captured, thirty-nine required treatment (table 14.1).<sup>28</sup>

TABLE 14.1

Disposition Of Bald Eagles Collected During 1989 Rescue Program

Fate	Number of Eagles
Trapped and released	98
Treated and released	24
Alive in rehabilitation centers	6
Died in captivity	9
<b>Total</b>	<b>137</b>

Source: T. P. Monahan and A. W. Maki, "The Exxon Valdez 1989 Wildlife Rescue and Rehabilitation Program," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute Pub. no. 4529, 1991), 136.

## SEA OTTERS

Sea otter operations had a media-intensive and conspicuous beginning, as public outrage over the grounding of the *Exxon Valdez* focused on their plight. In addition, they became the focal point of wrath over alleged bureaucratic interference with volunteer sea otter rescue efforts.

Sea otters rescue and rehabilitation operations were housed separate from the bird operations, and like them, were under FWS supervision. The sea otter program was active during 1989; conditions during subsequent years did not present a substantial threat to the animals. A total of 357 sea otters were processed at the three centers (table 14.2). Activity was heaviest at Valdez and Seward (which eventually became the sole center of sea otter operations). No sea otter rehabilitation operations were established at Kodiak, though approximately twenty otters were recovered in the Kodiak area, mostly during May 1989. Nearly all of the Prince William Sound otter capture occurred prior to 1 May. Kenai Peninsula otter recoveries peaked early in May, with new captures becoming rare after 10 July.<sup>29</sup> The impact on otters was strongly associated with the spill's leading edge.

The public manifested a substantial outpouring of sympathy for the plight of oiled sea otters. B. T. Batten of the FWS reported: "As a playful, photogenic, innocent bystander,

28. Monahan and Maki, 134.

29. Monahan and Maki, 135.

the sea otter epitomized the role of victim. Small, furry, childlike, and vulnerable, sea otters became compelling victims with whom everyone could identify." In the six months after the spill the FWS Anchorage press office recorded more than 460 press inquiries relating to the fate of otters. That compared with 140 inquiries for all topics the year before.<sup>30</sup>

TABLE 14.2

Survival Of Captured Sea Otters Held At Treatment Centers

Treatment Center	Otters Received	No. Survivors	Percent Survival
Seward	187	149	79.6
Homer	14	11	78.6
Valdez	156	63	40.4
<b>Totals</b>	<b>357</b>	<b>223</b>	<b>62.5</b>

Sources: Monahan and Maki, 136; and J. A. Estes, "Catastrophes and Conservation: Lessons From Sea Otters and the Exxon Valdez," *Science* 254 (13 Dec. 1991): 1596.

Note: A later estimate put the number of survivors at 234.

The cleaning of sea otters was dependent on the degree of oiling. If the animal was heavily oiled, it was washed immediately. If lightly oiled, washing was delayed for twelve to twenty hours so that the otter might recover from the stress of capture. The washing process involved massaging a solution of warm water and *Dawn*<sup>TM</sup> detergent into the fur of sedated animals.<sup>31</sup> It normally took a minimum of forty minutes to wash a moderately oiled otter, followed by a rinse that took a similar amount of time. Another hour of drying (toweling and warm air) completed the process. One result of washing was the loss of the otter's natural oils. When individual otters resumed the practice of grooming themselves, their fur was normally restored to its pre-oiling condition in seven to ten days.<sup>32</sup>

When otter rescue centers had populations of fifty to eighty animals, it was necessary to expend approximately \$1,200 per day for feed. Otters were fed five times per day, and given as much as they could eat. Hundreds of pounds of frozen seafood were flown to the centers. Food was delivered in lowered buckets, to avoid developing human dependence.<sup>33</sup>

What to do with rehabilitated otters presented a formidable problem. Otters have strong homing instincts; thus it was feared that they would return to oiled areas

30. B. T. Batten, "Press Interest in Sea Otters Affected by the T/V Exxon Valdez Oil Spill: A Star is Born," in *Proceedings of the Sea Otter Symposium* (Anchorage, Alaska: U.S. Fish and Wildlife Service, Dec. 1990), 35.

31. R. K. Wilson et al., "Clinical Treatment and Rehabilitation of Oiled Sea Otters," in *Sea Otter Rehabilitation Program: 1989 Exxon Valdez Oil Spill* (Galveston, Tex.: International Wildlife Research, 1990), 101. Two hundred fourteen of the 308 animals which were washed were chemically sedated. In the remaining cases, because of particularly serious conditions of the animals, it was determined that sedatives would endanger the otter, thus only physical restraint was used.

32. Williams and Davis, 96-97.

33. R. Smith, *Sea Otter Rescue: The Aftermath of an Oil Spill* (Dutton, N.Y.: Cobble Hill Books, 1990), 49-50.



following release, only to be oiled again. Floating pens were therefore used. Because such pens severely limit otters' ability to forage for food, they required an overseeing staff and a dependable food supply amounting to fifteen pounds per day, per animal. Ultimately, a few healthy otters were equipped with small transmitting devices, released, then monitored to determine their survivorship in the wild.<sup>34</sup>

#### MARINE MAMMALS

During the first days of the spill a small number of harbor seals were collected and brought to the Valdez wildlife rescue center; however, there was never any substantial program for rescue and rehabilitation of harbor seals. Unlike sea otters, harbor seals depend on layers of fatty tissues rather than fur for insulation. As a result, they are less subject to the most negative effects of oiling. In addition, it was found that harbor seals had greater chances for survival if they were *not* captured. The FWS, therefore, instructed that the practice of capturing and delivering them to rescue centers be stopped. Those animals that had been captured earlier were placed in the custody of a caretaker at Anchor Point, near Homer, where they were eventually released.<sup>35</sup>

#### CLOSING THE RESCUE CENTERS

As early as April, rescue and rehabilitation activities increasingly became centered in Seward. The first facility to close operations was Kodiak (3 July), followed by the Prince William Sound facility at Valdez (21 July), and the Homer temporary care facility (30 July). Rescue operations in both Kodiak and Homer were continued until early September, with wildlife being sent to the rehabilitation center in Seward. The center in Seward was closed 11 September with the few remaining animals sent to an aquarium in the "lower 48." Each closing was justified as a response to declining activity.

#### CARCASS DISPOSAL

On 5 April 1989, the FWS established a wildlife receiving station (a morgue) for the processing and storage of dead animals brought to Valdez. The morgue consisted of a freezer van and a workbench, which was staffed by two FWS biologists until June, after which it was operated on an "as needed" basis. Later, additional morgue operations were established at Kodiak, Seward, and Homer, and by the end of the summer, over 36,000 bird and 1,000 sea otter carcasses had been processed and stored in five freezer vans that remained until 1992 in Anchorage.<sup>36</sup>

A March 1991 document, filed by U.S. attorneys in *United States v. Exxon Corporation, et al.*, estimated that from 260,000 to 580,000 birds died in the spill area, with the "best estimates" ranging between 350,000 to 390,000.<sup>37</sup> These figures exceed by a considerable

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34. Ibid., 58–60. Initially seven otters were released with transmitters attached to rear flippers. Later, surgical implants were used.

35. Monahan, interview, 10 Apr. 1992.

36. Parker, 245.

37. *United States of America v. Exxon Corporation et al.*, Civil Action no. A91–082, filed 8 Apr. 1991 at U.S. District Court of Alaska. See attachment, "Summary of Effects of the Exxon Valdez Oil Spill on Natural Resources and Archaeological

margin bird casualty estimates from the *Torrey Canyon* spill (7,815 dead birds recovered, 30,000 total estimated dead) and the *Amoco Cadiz* spill (4,572 dead birds recovered, 20,000 total estimated dead).

## EFFECTIVENESS OF WILDLIFE RESCUE AND REHABILITATION

This section discusses the fate of the animals brought to the rescue centers, how public reaction influenced the rescue and rehabilitation program, and the costs associated with it.

### SEA OTTERS

Recovery rates of oiled sea otters brought to the rescue centers were lowest during the first weeks following the spill. Survivorship at the Valdez center was lowest (40.4 percent), a consequence of the heavy oil concentrations on the waters of Prince William Sound throughout March and April (the period during which most of the Valdez rescue effort occurred). As a result, otters received at the Valdez center had a greater likelihood of being heavily or moderately oiled than those arriving later at Homer and Seward. At Valdez over 50 percent of arrivals were heavily oiled compared to less than 5 percent at the Homer and Seward centers. A heavily oiled animal had less than a 30 percent chance of survival, while those in a moderate category had a 40 percent chance for recovery.<sup>38</sup>

Of the sea otters that survived treatment at the three centers, thirty-seven were judged unsuitable for return to their natural habitat, and were thus placed in zoos or aquaria.<sup>39</sup> The remaining otters were released on dates running through the end of August 1989. Among these were forty-five that had been equipped with radio transmitters. When the next spring came, eleven of these were known to be dead, and eleven others were missing, suggesting a relatively low post-release survival rate.<sup>40</sup>

### BALD EAGLES

Based on evidence from the 1989 eagle collection and rehabilitation programs, along with quantitative observations made in 1990, one IBRRC official concluded that the *Exxon Valdez* oil spill was not the catastrophe for bald eagles that was originally feared. Eagles seemed to avoid the worst oiled areas, perhaps thereby limiting their ingestion of oil. It appeared also that as the oil weathered and became more inert, the risks were diminished for such raptors as eagles. International Bird Rescue Research Center

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Resources," Mar. 1991. These estimates were based on modeling that Exxon disputes (Comdr. D. Maguire and G. Locke [Exxon], personal communication, 3 Feb. 1993, [no written record exists]).

38. Williams and Davis, 89 and 140-41.

39. Estes, 1596.

40. Cutter Information Corporation, "Researchers' Opinions Differ On Alaskan Sea Otter Rescue Efforts," *Oil Spill Intelligence Report* 13 (24 May 1990): 4. There is some dispute about the fate of those otters which are presumed to be dead. Randall Davis of International Wildlife Rescue, a key figure in the *Exxon Valdez* otter rescue effort points out "that about half of the otters presumed dead are only missing," and that the demise of implanted otters may also be "attributable to the implantation surgery itself."

authorities reported that the bald eagle population was doing well in Prince William Sound, and that there is reason for optimism for their long-range future in that area.<sup>41</sup>

#### HARBOR SEALS

Twenty-two harbor seals had been collected during April and May. Of that number, twenty-one were listed as pups, and one was an adult. Six of the animals were reported to have expired.<sup>42</sup> It may never be known how many harbor seals perished during the spill, however, because seals sink when they die. Only nineteen seal carcasses were recovered. Wildlife managers were also handicapped in determining the extent of damage to the seal population by the fact that there had been no census of Prince William Sound harbor seals for over a decade prior to the spill.<sup>43</sup>

#### MARINE BIRDS

Rescue operations ultimately recovered 1,629 live marine birds (table 14.3), representing seventy-one different species. The most abundant was the common murre (501), followed by the pigeon guillemot (118), the pelagic cormorant (115), and the short-tailed shearwater (105). Approximately 50 percent of the live birds brought to rehabilitation centers were rehabilitated and released; a figure judged to be excellent by Exxon officials overseeing the rescue efforts.<sup>44</sup> Thirty-six thousand, four hundred seventy-one bird carcasses were also retrieved.

TABLE 14.3

Distribution Of Live Birds Brought To Rehabilitation Centers in 1989

Rehab. Center	No. of Birds	Percentage of Birds
Seward	849	52.1
Valdez	367	22.5
Kodiak	221	13.6
Homer	192	11.8
<b>Totals</b>	<b>1629</b>	<b>100.0</b>

Source: M. A. Wood and N. Heaphy, "Rehabilitation of Oiled Seabirds and Bald Eagles Following The Exxon Valdez Oil Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute Pub. no. 4529, 1991), 236.

Note: Figures include birds that might have subsequently died during treatment.

41. M. J. Gibson, "Bald Eagles in Alaska Following the Exxon Valdez Oil Spill," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 232.

42. National Marine Fisheries Service, "Marine Mammals," 14 June 1989, no. C525, FOSC Exxon Valdez Archive.

43. *USA v. Exxon Corp. et al.*, filed 8 Apr. 1991. See attachment.

44. Monahan and Maki, 133.

## PUBLIC INFLUENCE ON PROGRAM

Public sentiment had a substantial impact on the scope and direction of these programs, particularly the otter rescue program. Decisions had to be explained and justified in layman's language, and were constantly challenged in the press and by the emotional reactions of the public.<sup>45</sup>

Because sea otter decisions were so politically sensitive, they were often subject to delays. Examples include the otter release program, delayed for several weeks amid controversies about when and where the releases should occur.<sup>46</sup> One authority (who declined to be named) felt that the Seward otter center was never needed, constructed simply because the public *thought* that it was needed.<sup>47</sup>

It was necessary to maintain a security force at the centers; in the case of Valdez, a public relations staff member was assigned.<sup>48</sup> The intensity of interest in sea otters and the need for a relatively quiet place for their rehabilitation were often in conflict. Visitors were not welcomed at the centers, though many came to offer encouragement, or out of curiosity. The first release of otters attracted a substantial amount of attention. Hordes of reporters and photographers wanted to observe the event. As a result, a location needed to be chosen where the media could be accommodated, despite fears that the added commotion would complicate the process of introducing stress-sensitive animals to the natural environment.<sup>49</sup>

## COST AND RESOURCE REQUIREMENTS

The scope of wildlife rescue efforts becomes apparent when the amount of money and resources committed to them are examined. Several hundred people (up to four hundred at the peak period) staffed the rescue and rehabilitation projects. A total of 143 boats served search and rescue operations at one time or another, and up to three aircraft were present to transport animals. About forty boats were active at each of the Seward and Prince William Sound sectors during the busiest operations, with vessel numbers peaking at twenty-four in Kodiak and eight in Homer. The total cost was estimated at \$45 million. Of the \$45 million, \$25.3 million was spent on bird rescue and rehabilitation, \$18.3 million for sea otters, and \$1.4 million for eagle rescue programs. Another analysis showed that \$21 million was spent for dedicated boats, \$12 million for personnel costs, \$10 million for operation of the centers, and \$2 million for aircraft (figure 14.1).<sup>50</sup>

The high cost of these operations led some to question the wisdom of spending such substantial amounts when the returns were so limited. "For all the furious effort, and all the expense, and all of the real heroics both at sea and at the rehab[ilitation] centers,

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45. Batten, 37–38.

46. *Ibid.*, 38.

47. He pointed to the small numbers of seriously affected otters which were treated there as evidence.

48. Monahan, interview, 10 Apr. 1992.

49. Batten, 39.

50. Monahan and Maki, 132–36.

the number of animals that would be saved would be trivial," stated a September 1989 article in the *Audubon* magazine. When it was noted that expenditures averaged \$82,000 per sea otter rescued and rehabilitated, some labeled the figures "Exxon conscience money."<sup>51</sup> Others claimed that there were substantial benefits in the research that resulted from wildlife rescue efforts. Wood and Heaphy of the IBRRC observed that:

Far more medical and clinical evaluations of the effects of oil on birds were possible during this rehabilitation than ever before. For the first time, blood serum chemistries, necropsies, and histopathologies were performed on a large number of birds, providing new information to researchers, veterinarians, and rehabilitators on how to better care for animals with signs of oil toxicity. Due to the length of the rehabilitation effort, more time was available to attempt new treatments and procedures that ultimately reduced the time that severely affected birds spent in captivity. Survival and release rates were increased in birds with hemolytic anemias that previously had little chance for survival. Many of these new findings will be used to enhance rehabilitation efforts in future spills.<sup>52</sup>

Later evaluations by FWS and IBRRC officials agreed that the experience helped stimulate greater readiness for future spills:

The Service [FWS] is updating both plans [national and regional contingency plans] using information obtained and lessons learned during the *Exxon Valdez* incident. The Service intends these updates to allow better protection of Department of the Interior trust responsibilities and National Wildlife refuge lands.<sup>53</sup>

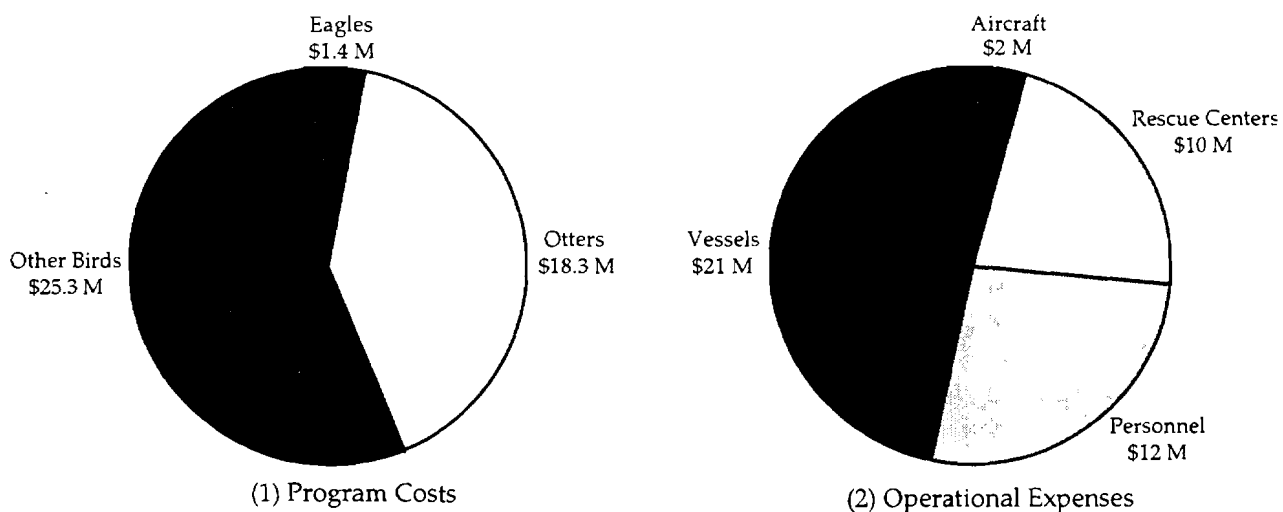


Figure 14.1. The cost of Exxon's wildlife rescue and rehabilitation program was \$45 million. In this figure, the total cost is itemized in pie chart (1) by the type of wildlife treated. In pie chart (2), costs are itemized by operational categories.

Source: Reproduced with permission from Exxon.

51. J. R. Luoma, "Terror and Triage at the Laundry," *Audubon* 91 (Sept. 1989): 99.

52. Wood and Heaphy, 239.

53. Parker, 245.

An Exxon official quoted in the *Audubon* article seemed to suggest that benefit-cost questions were not an issue with Exxon when he said: "Every dime being spent on bird and otter rescue is Exxon money. Every dime."<sup>54</sup>

## SUMMARY

While the affects on wildlife caused by the *Exxon Valdez* spill are likely to be subject to dispute for some time to come, the spill unquestionably represented by far the worst oil spill-induced calamity for wildlife that the world has ever seen. It also triggered the largest and most costly effort that has ever been undertaken to rescue and rehabilitate birds and mammals directly affected by the spill.

The Department of the Interior, acting through its representative the U.S. Fish and Wildlife Service, had primary oversight responsibility for the wildlife rescue efforts that took place. For the most part, Exxon contracted directly for the necessary services, engaging most notably the International Bird Rescue Research Center of Berkeley, California, Sea World Research Institute of San Diego, and other noted experts in wildlife rescue and rehabilitation. The FOSC played largely a support role in the activities that took place.

Wildlife casualties generally followed the leading edge of the spill, rescue activities thus peaked in April in Prince William Sound, and had largely run its course by July. During 1989, 1,629 live marine birds, 137 bald eagles, and 357 sea otters were brought to four different rehabilitation centers. Both volunteers and paid employees took part in the effort, although Exxon engendered much criticism for not making more use of volunteers than it did.

Efforts to rehabilitate the injured wildlife brought to the centers were of unprecedented complexity and cost. A total of \$45 million was spent by Exxon on wildlife rescue and rehabilitation efforts. With survival rates running at 50 percent or less for most of the species represented in approximately 2,000 animals brought to rescue centers, many questioned the value of these efforts.

There is no evidence that wildlife rescue and rehabilitation efforts interfered in a significant way with other aspects of the response. Nor does it appear that response activities under direct FOSC control adversely affected wildlife rescue efforts. But the images of injured and dead wildlife that filled news media coverage of the spill proved to be politically potent, serving to focus anger not only on Exxon but on other parties who, like the Coast Guard, were seen as having contributed to the causes of the spill through inattention. Thus the inefficiencies that many perceived in wildlife rescue were of little consequence for organizations like the Coast Guard compared to the price they paid in the anger and hostility that images of dead and dying wildlife victims of the spill helped create.

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54. Luoma, 99.



## CHAPTER 15. COMMUNICATIONS AND AIR OPERATIONS SUPPORT

### OVERVIEW

Operating a major oil spill response from Valdez, Alaska, was problematic because the area was ill-equipped for such an undertaking. Most of the affected area was far from staging facilities and sources of supply. This section of the report considers two important logistical areas; air, and communications support. In each area, it was necessary to upgrade small-scale existing facilities and/or operations, and at first, to make do with what were often inadequate arrangements.

### AIR TRAFFIC CONTROL AND SAFETY MEASURES

The response to the grounding of the *Exxon Valdez* was maintained at a very high level throughout the summer of 1989. This meant a very substantial increase in air traffic, particularly near the stranded vessel itself before it was salvaged, and at the Valdez Municipal Airport. It soon became necessary to effect a number of temporary measures to deal with crowded airspace and potentially dangerous operating conditions for light aircraft. Coast Guard observers, dispatched to the scene from Air Station Kodiak, at one point noted twenty aircraft simultaneously circling within a three mile radius of the stranded tanker.<sup>1</sup>

Aircraft takeoffs and landings (sorties) normally occur at a rate of eight to ten per day at the Valdez airport, where the facilities include a small passenger terminal serviced by feeder commercial air carriers. Private aircraft are served there as well. Shortly after the grounding, however, takeoffs and landings swelled to a total of three hundred to four hundred per day—almost a 4,000 percent increase.<sup>2</sup> The airport thus suddenly became the third busiest in Alaska (figure 15.1).

On the second day of the response (25 March) the Federal On Scene Coordinator (FOSC) assigned a Coast Guard air operations officer from Air Station Kodiak to regulate air traffic at the spill site, and to coordinate movement of Coast Guard aircraft supporting the response effort.<sup>3</sup> By 1115, the Federal Aviation Administration (FAA) had established temporary flight restrictions in the vicinity of the *Exxon Valdez*.<sup>4</sup> Initial traffic control efforts were hampered, however, by lack of suitable aircraft communications equipment. The air operations officer had at first to utilize a hand-held very high frequency (VHF) radio to establish aircraft contact. The FAA quickly made arrangements to activate a previously decommissioned tower at Valdez Airport,

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1. Lt. Comdr. G. M. Flood, memorandum to Lt. Comdr. J. Whitehead, 28 Jan. 1990, no. W1632, FOSC Exxon Valdez Archive.

2. D. Hughes/Boston, "Air Operations are Critical to Alaska Oil Spill Cleanup," *Aviation Week and Space Technology* (10 Apr. 1989): 16.

3. Lt. Comdr. G. M. Flood, memorandum to commanding officer, 28 May 1989, no. C1027, FOSC Exxon Valdez Archive.

4. Alaska Oil Spill Commission, T/V Exxon Valdez Oil Spill Chronology, in "Spill: The Wreck of the Exxon Valdez," vol. 4, appendix N, Feb. 1990, no. W1593, FOSC Exxon Valdez Archive. It appears that the buildup of air traffic began at daylight, with the first flights reported at 0600.



thus permitting emergency air traffic control operations to begin at noon on Sunday, 26 March 1989.<sup>5</sup>

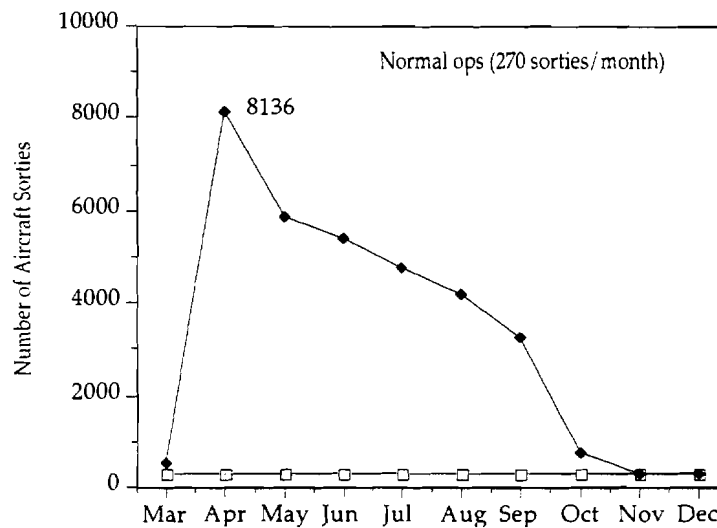


Figure 15.1. Number of air sorties per month (March–December, 1989).

Source: Federal Aviation Agency summary of aeronautical activity at Valdez ATCT, April–December 1989, undated.

On Sunday, 26 March, the FOSC issued a notice to airmen (NOTAM) stipulating that air traffic was restricted within an eight mile radius of the *Exxon Valdez*, at altitudes from surface to three thousand feet. Anyone wishing to enter the restricted space needed to secure prior permission from the FAA (at Cordova) or from the Coast Guard.<sup>6</sup> These actions were a critical step toward creating order and safer conditions in the area. On Thursday, 30 March, Robert F. Whittington, acting administrator of the FAA in Washington, D.C., further extended the zone of FAA control through the issuance of a federal aviation regulation to set up 2,677 square miles of controlled air traffic space in three areas of Prince William Sound (figure 15.2).<sup>7</sup> These restrictions served to provide general FAA control over the spill area, while securing the area immediately about the vessel under Coast Guard auspices.

Another motivation for establishing air traffic restrictions was to reduce disturbance to wildlife. News reporters in particular strongly desired to enter the spill area. "The press probably has killed some animals because they drove birds into oiled areas," reported Pam Bergmann of the Department of the Interior. In response to this problem, the FAA and the FOSC declared that press flights into the response area would be limited to four per day.<sup>8</sup>

5. USCG Pollution Report, 26 Mar. 1989 (PWS Polrep 5), sec. (2)(E).

6. Authority for the FOSC to issue the NOTAM was obtained through Special Aviation Regulation No. 55 (FAA), 25 Mar. 1989. Reference to the specific restricted zones is made in Coast Guard District 17, message to USCGC *Rush*, 30 Mar. 1989, no. P 30215Z.

7. Special federal aviation regulation No. 55 (docket no. 25857, 5 Apr. 1989), with effective date of 30 Mar. 1989.

8. D. Foster (AP), "Concerns for Wildlife Prompt Restrictions on Media Planes," *The Anchorage Times*, 3 Apr. 1989.

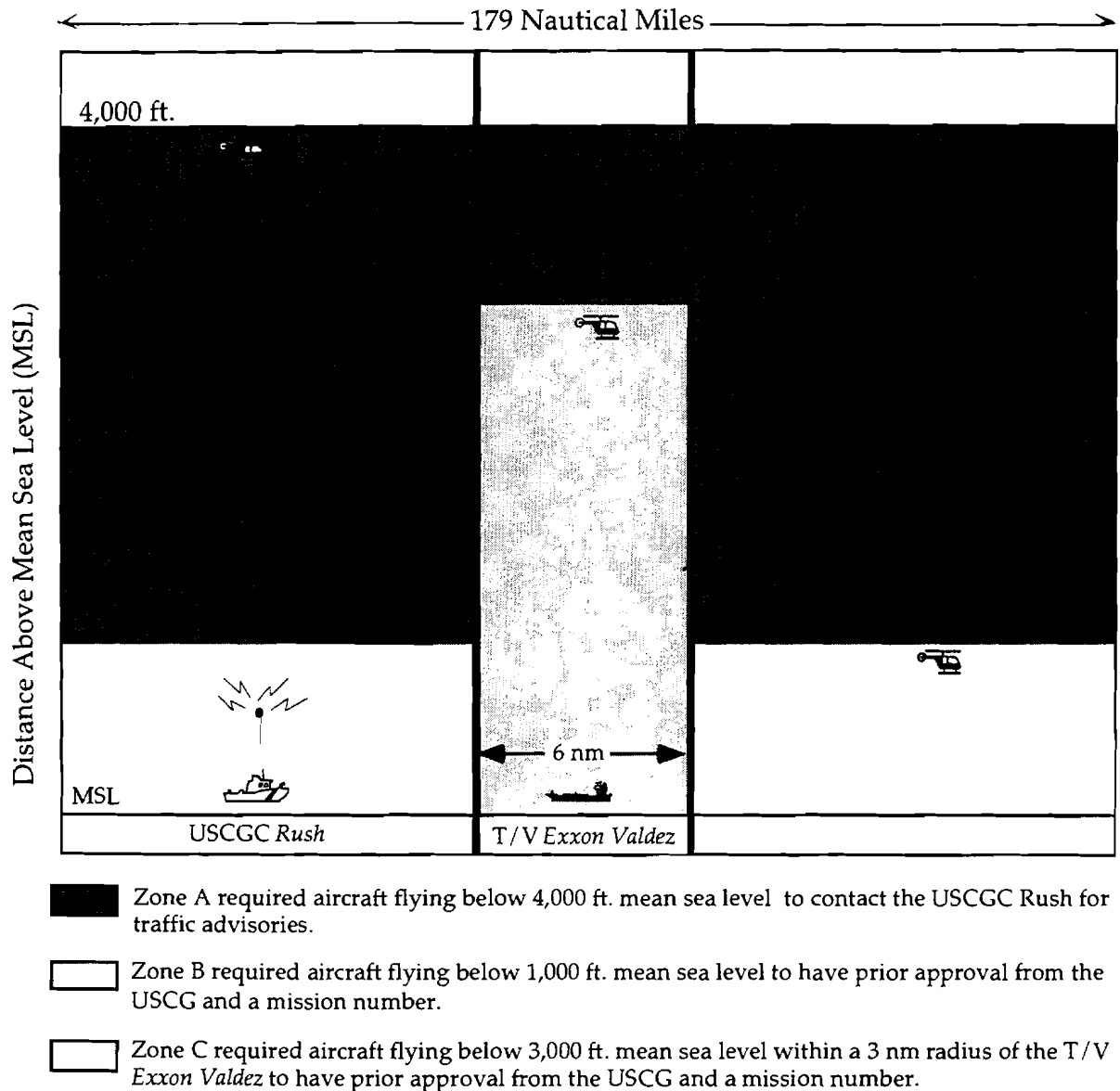


Figure 15.2. Zones of controlled air space in Prince William Sound.

Note: Zones A and B covered the same geographical area which, with a perimeter of 179 nautical miles, covered most of Prince William Sound.

The next step was to secure and put into place all of the needed communications gear to support larger-scale aircraft operations. Coast Guard, FAA, and Alaska Air National Guard (AANG) personnel soon arrived with equipment and began operations. The Coast Guard obtained a transportable communications center (TCC) from the Coast Guard air station at Sacramento so that Coast Guard aircraft might be properly coordinated while an air operations center was being established.<sup>9</sup> Federal Aviation Administration personnel were instrumental in establishing controlled air operations at Valdez. On 27 March, with the help of U.S. Army air traffic controllers (from Ft. Wainwright), FAA staff members set up a control tower in a previously

9. Flood, memorandum to Whitehead, 28 Jan. 1990.

decommissioned facility at the Valdez Airport.<sup>10</sup> In the meantime, AANG team members arrived with refueling equipment, firefighting personnel and equipment, and portable communications gear.<sup>11</sup> Each of these helped facilitate what became an extremely rapid increase of flight traffic in the Valdez area.

The fleet of aircraft deployed directly in the response grew quickly. Within two weeks thirty-six helicopters (twenty-nine civilian and seven military) and several additional fixed-wing craft equipped with floats were employed.<sup>12</sup> On a typical morning, departures began at daybreak from the Valdez Airport, which is surrounded on three sides by mountains. Aircraft would head over the harbor and then outward to Prince William Sound.

Because of the terrain of the Valdez area, traffic congestion was a prominent consideration. The airport is located at 120 feet above mean sea level, with mountains up to forty-five hundred feet surrounding in close proximity. Passage to the sound is through the Valdez Narrows, an area that offers numerous potential hazards. Pilots report that the passage is somewhat like "flying through a tunnel" when conditions are overcast. The narrows are normally monitored by an FAA closed circuit television camera to detect possibly dangerous weather developments.<sup>13</sup>

As the cleanup moved further out into the sound, the airport at Cordova was increasingly utilized. At the Merle K. "Mudhole" Smith Airport, refueling and other airport functional contacts rose to as many as 550 per day shortly after the beginning of operations.<sup>14</sup>

The U.S. Coast Guard Cutter (USCGC) *Rush*, a 378-foot high endurance cutter, was assigned to operate as the air traffic coordinating platform in Prince William Sound beginning on 28 March (Tuesday). Two FAA personnel and two Coast Guard radarmen aboard the ship answered radio calls from all aircraft on-scene, and plotted their positions. Tail numbers were compared with the list of air operations clearance numbers, establishing a monitoring system for traffic flow within the area.<sup>15</sup>

While the USCGC *Rush* improved aircraft safety in the vicinity of the *Exxon Valdez*, it provided far from an ideal arrangement. The USCGC *Rush*'s radar equipment did not have "separation capability."<sup>16</sup> The system thus depended upon aircraft reporting their arrivals and whereabouts, but that was not always done. In addition, radio frequencies were often crowded, thus it was not always possible to make reports despite a pilot's good intentions. A Coast Guard observer described an incident involving an aircraft that had encountered mechanical difficulties. It serves as an indicator of conditions of the moment. After unsuccessfully attempting to establish contact with the USCGC

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10. Hughes/Boston, 16.

11. W. S. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 1990, no. W1325, FOSC Exxon Valdez Archive, 12.

12. Hughes/Boston, 16.

13. *Ibid.*, 17.

14. *Ibid.*, 16-18. The airport is named after a colorful local bush pilot who once landed his plane in a mudhole. Smith was also a founder of Alaska Airlines, a prominent regional carrier.

15. Flood, memorandum to Whitehead, 28 Jan. 1990.

16. Flood, memorandum to commanding officer, 28 May 1989.

*Rush*, the pilot was forced to land his amphibious airplane nearby. He then managed to repair the problem (a malfunctioning oil line), and departed without ever gaining entry into the air traffic management system.<sup>17</sup>

The FOSC issued standards for helicopter landings on response area shorelines, where pilots faced hazards that included narrow landing zones, frequent windy conditions, and slippery landing surfaces. Using the guidelines of 46 CFR sections 108.231–241 and 108.489, the FOSC also developed requirements for equipment and safety practices at several field-based refueling areas.<sup>18</sup>

The Alaska Air National Guard helped to establish two portable refueling stations, assisted in setting up an aircraft parking system, and aided in establishing a taxiway plan for movement of aircraft on the ground at Valdez Airport.<sup>19</sup> Although these functions are not a direct FOSC responsibility, aircraft logistics can pose significant challenges, especially when the response takes place in a remote area.

U.S. Air Force (USAF) airlift operations provided vital assistance during the equipment procurement phase of the response. The first of several support missions was initiated at Travis Air Force Base, California, on 27 March. That flight, a C-5A transport aircraft, delivered 159,000 pounds of supplies and equipment to the response area. During the first six weeks, a total of fifty support missions were flown by USAF personnel, and nearly eleven hundred tons of cargo were involved. The bulk of cargo consisted of boom and booming supplies, delivered primarily by the huge C-5 transports.<sup>20</sup> Because these aircraft had to land at Elmendorf Air Force Base, near Anchorage, supplies had to be either trucked to Valdez or shipped by sea to Seward for deployment.

In establishing control over air operations, the FOSC found it necessary to affirm his own authority to do so. Exxon, although expressing a willingness to “coordinate these activities with the Coast Guard and FAA,” also stated its desire to “maintain the safe level of operation...under our [Exxon’s] guidance.”<sup>21</sup> In response, the FOSC (then Rear Admiral E. Nelson) informed Exxon that the joint operations plan would prevail instead in view of the fact that many of the operations in the area were not controlled by Exxon, and uncoordinated, independent operations might present safety problems.<sup>22</sup>

Flight operations centers were established for state, Exxon, and Coast Guard air activities and efforts were made to combine missions whenever possible. Dignitaries (VIPs) were accommodated aboard aircraft engaged in normal operations whenever possible. Agency representatives began to share the same aircraft while doing “sheening” searches. Not only did this reduce the number of missions being flown, but it also led to the indirect benefit that being on the same plane permitted observers to

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17. Lt. Comdr. M. Flood, conversation record by Lt. Comdr. R. Gaunt, 8 Apr. 1993, no. F780, FOSC Exxon Valdez Archive.

18. Capt. G. E. Haines, letter to O. Harrison (Exxon), 19 May 1989, no. C324; and USCG, “Minimum Safety Standards,” 19 May 1989, no. C324, FOSC Exxon Valdez Archive.

19. W. S. Hanable, “Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study,” 12. (See “Exxon Valdez Oil Spill Summary Report,” by J. P. Beans [Dept. of Military and Veterans Affairs, state of Alaska].)

20. Hanable, 33.

21. O. Harrison (Exxon), letter to Rear Adm. E. Nelson, 13 Apr. 1989, no. C621, FOSC Exxon Valdez Archive.

22. Rear Adm. E. Nelson, letter to O. Harrison (Exxon), 14 Apr. 1989, no. C700, FOSC Exxon Valdez Archive.

compare notes, and hopefully come to consensus on what they were seeing. Consolidated flights meant that both air congestion and airport traffic were reduced.<sup>23</sup>

Vice Admiral Clyde E. Robbins later praised the contributions of the FAA. "Significant numbers of civilian and military aircraft," he noted:

Began operating over and on Prince William Sound waters shortly after the oil spill occurred. Coordination of the control of these aircraft became paramount to prevent the possibility of an aviation mishap. At the same time, Valdez Airport (an uncontrolled airfield) began rivaling most CONUS [continental United States] metropolitan airports in sheer frequency of landings and takeoffs. The need for positive control around the airport and the oil treatment operation areas rapidly became critical. Through your tireless efforts, aviation support for *Exxon Valdez* oil treatment operations ran smoothly.<sup>24</sup>

Following the transition from 1989 summer operations, the FOSC also gave recognition to ERA Aviation, a contract aircraft service based in Anchorage. The company had a total of sixty-six aircraft (fixed and rotary) operating in the sound throughout the summer, ferrying people and equipment to boats, barges, and shorelines. "ERA went the extra mile," reported Commander Ed Thompson, commanding officer at Marine Safety Office (MSO) Valdez. "Without their expertise and support...the operation wouldn't have been possible." For their contribution, Rear Admiral David E. Ciancaglini awarded the Coast Guard certificate of merit to the firm.<sup>25</sup> (ERA Aviation continued to support the cleanup through completion of the response in 1992.)

In 1990 and 1991 there was a diminished need for aircraft support. Thus operations were consolidated at a central location, the Joint Operations Center in Anchorage. These scaled-down and centralized operations proved adequate for the second through fourth years of the response.

## COMMUNICATIONS

A dependable communications system was essential for maintaining cleanup operations. Within weeks of the spill, hundreds of workers and scores of vessels were deployed over a wide area, necessitating the installation of a similarly wide-ranging communications system. Vast distances were involved, and the communications network in place at the time of the grounding was very limited.<sup>26</sup> Moreover, terrain in the region caused many shadowed or "blocked out" areas, including locations that would soon become busy centers of operations. Within a very short period, existing radio communication capabilities were overwhelmed, and it was evident that additional equipment would need to be secured and activated.

Exxon and state of Alaska authorities took lead roles in securing additional communications equipment to expand capabilities in the Prince William Sound area.

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23. Flood, memorandum to commanding officer, 28 May 1989.

24. Vice Adm. C. E. Robbins, letter to F. Cunningham (FAA), 27 Sept. 1989, no. W2470, FOSC Exxon Valdez Archive.

25. "ERA Aviation Gets Kudos From Coast Guard for Oil Spill Work," *Alaska Journal of Commerce* 13 (6 Nov. 1989).

26. As of March 1989, communications capabilities in the Prince William Sound area consisted of eight marine band repeater links operated by Coast Guard MSO Valdez, a U.S. Forest Service repeater and radio link to U.S. Forest Service headquarters in Cordova, marine telephone operator services, and the state microwave system which terminated at Valdez.

By 27 March, Exxon had purchased and begun issuing portable hand-held radios to response personnel, and within the next few days the state moved eight forty-foot equipment trailers, loaded with communications gear, into the area. Several agencies worked cooperatively to plan and establish an expanded network. In addition to state and Exxon communications personnel, representatives from the Coast Guard, the Federal Communications Commission (FCC), the Federal Aviation Administration, and the Department of Defense (DOD) were involved in system development.

One concern was the size of the available radio frequency spectrum in the lightly populated areas affected by the spill. Initially, there were very few on-line radio frequencies in the Prince William Sound area, handicapping early response operations. Because there were many open and unused frequencies, and because the FCC was able to assist in expanding the number of authorized segments, it was possible to expand quickly the radio network to comfortably accommodate operational needs, however. A total of 112 communications segments were eventually made available during 1989 for use in cleanup operations.<sup>27</sup>

A joint committee on communications was organized early in the response, involving Exxon, the Alaska Department of Environmental Conservation (ADEC), Alaska Emergency Services and Division of Communications authorities, the Coast Guard, and a Prince William Sound fishermen's group. A general communications plan was issued by the group on 8 April. The plan listed frequencies to be used, and described capabilities and components of the existing system. The new equipment which was then being installed and that was expected to be on-line within a short time was also identified.<sup>28</sup> Much of the effort was funded by Exxon.

The first improvements in the communications network consisted of two dozen radio repeater relays, thus expanding the size of the radio network, tactical satellite system capabilities, and INMARSAT (telephonic commercial satellite) connections. U.S. Air Force personnel set up portable tactical satellite systems (URC 110s) to provide communications capabilities for areas which could not otherwise be reached.<sup>29</sup> The communications network at Valdez had been very limited at the time of the spill. The ability to communicate with the outside world through voice, facsimile, and data transmission soon became very inadequate. Alascom and the Copper Valley Telephone Cooperative were credited by Exxon communications authorities with outstanding work in setting up additional circuits and increasing capabilities at a very crucial early time. The Federal Communications Commission demonstrated "unparalleled assistance" when it granted special temporary authority for new installations. Securing permission for new communications systems normally takes

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27. G. Shuman (Valdez Communications Center), "Exxon Valdez Oil Spill Incident Communications Plan," 29 Apr. 1989, no. C1785, FOSC Exxon Valdez Archive.

28. USCG (MSO Valdez/communications), memorandum to USCGCs *Rush*, *Sedge*, and *Ironwood*, 8 Apr. 1989, no. C1780, FOSC Exxon Valdez Archive.

29. R. Black (Exxon), conversation record by Lt. Comdr. R. Gaunt, 13 Apr. 1993, no. F782, FOSC Exxon Valdez Archive. However, R. Black pointed out that there were several limitations in the arrangement. Maintenance was a problem, and the Air Force was anxious to secure return of the gear as soon as other arrangements could be made. In addition, use of DOD equipment raised questions related to the propriety of allowing civilian users of military equipment.

from two to six months, but the FCC provided a twenty-four hour turnaround of special permission authority.<sup>30</sup>

Late in April, communications functions in Valdez were consolidated into a Joint Communications Center (JCC) and staffed on a twenty-four hour basis by Exxon, state, and Coast Guard personnel. The JCC was able to patch (relay) land line telephone calls to the field using AM or FM frequencies. The center served as a focal point for FOSC communications and communications policy development, and as the place where communication problems were resolved.<sup>31</sup>

#### ESTABLISHING COMMUNICATIONS IN WESTERN ALASKA

Initial planning and development for communications focused on needs in Prince William Sound. By the third week in April, plans were being made to ensure an adequate communications network for the western Alaska area as well. A meeting held in Kodiak, on 23 April, focused on the adequacy of existing communications systems in western Alaska. Marine VHF equipment was meeting Kodiak area needs, but deficiencies were noted in Seward and Homer. Interagency communication centers were planned at each of these locations, and plans for long-line microwave links between Seward, Homer, and Valdez were agreed upon. Further discussion involved air to ground communication needs, development of additional ultra high-frequency (UHF) radio capabilities, and establishing satellite communications linkages.<sup>32</sup>

A meeting of the communications committee was held on 4 May.<sup>33</sup> At the session, the members placed a conference call to a meeting of the Seward Multi-Agency Advisory Committee (MAC) to discuss communication needs for various agencies located in the western Alaska area. Present were representatives of the National Oceanic and Atmospheric Administration (NOAA), the National Park Service, the U.S. Fish and Wildlife Service, Alaska Department of Environmental Conservation, Alaska Department of Natural Resources, Alaska Fish and Game, and the city of Seward. A second call was made to Homer, where the MAC had convened for discussions as well. Six agencies were represented at the Homer session. The meeting and conference calls served to identify communications needs and existing resources, and provided direction to "expand communications circuits down the coast to the southwest-Seward and Homer Joint Command Centers—to support cleanup operations in those areas."<sup>34</sup>

There was substantial friction between Exxon and the state of Alaska as plans were being made for western Alaska communications systems to be deployed. The state OSC declared that his agency "expect[ed] this clean-up activity to span at least several years,"

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30. Black, conversation record, 13 Apr. 1990.

31. Shuman, "Exxon Valdez Oil Spill Incident Communications Plan."

32. "Communication Meeting" (an unsigned document which does not bear identification of the specific producing agency, 23 April 89), no. C1768, FOSC Exxon Valdez Archive.

33. The "committee" is not more specifically identified on existing documents, but it consisted of representatives from the Coast Guard, Exxon, and two state agency persons. It may be recalled that Coast Guard incident command posts (ICPs) had been established in the western Alaska area prior to the date of the conference call.

34. USCG Pollution Report O 060601Z May 1989 (PWS Polrep 67), sec. (1)(F).

and argued that an expanded communications network was needed "NOW!"<sup>35</sup> The state thus argued for permanent systems that could serve the area for the several years it already felt would be necessary to complete cleanup operations and subsequent follow up studies. Exxon felt, on the other hand, that it was obligated to provide only communication "as needed to clean up the beaches," and not more costly and permanent installations. It argued that temporary and mobile communications gear, which could be removed as cleanup was completed, was adequate. Exxon reportedly took "great displeasure" and "offense" at statements in letters from the state regarding communications matters.<sup>36</sup>

State authorities ultimately decided to develop a separate communications system apart from the Exxon network. Parallel communications systems thus ultimately emerged. The state developed a 150 MHz network that generally employed longer-term "fixed" installations. Exxon's system was a 450 MHz setup, and tended towards temporary installations that were lower in environmental impact and removable during shutdown periods.<sup>37</sup> Exxon continued to maintain that a single network could provide for all the needs of the cleanup, and it offered use of its system to ADEC and other parties. But the state continued to reject the idea of a shared system and moved forward with construction of its own communications network. Because Exxon had opposed the idea of separate networks, it was later reluctant to underwrite the costs of the state's communication system.<sup>38</sup>

In Exxon's view, the state wished to have a secure network where confidential conversations might take place. State authorities offer a somewhat different rationale regarding their desire for an independent communications system. First, the volume of message traffic in 1989 justified the additional system capacity. A second motivation, in the view of one ADEC official, was that Exxon authorities had a tendency to "want to control" response resources, leaving others to face the necessity of asking Exxon's permission for their use. Fears that there would be problems gaining access to the communications network thus led the state to duplicate it.<sup>39</sup>

#### THE JOINT COMMUNICATIONS CENTER AND THE DEVELOPED NETWORK

As the spill response communications network evolved, the Joint Communications Center in Valdez was supplemented by a network of ten other communication centers, each serving the needs of a particular function or region (table 15.1). Multiple centers also meant the system had built-in redundancy in the event of primary system failure. Once the regional centers were in place, every work site was able to communicate directly with a regional center. In the Kodiak region, for example, by August 1989 it was

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35. B. Lamoreaux (state OSC), memorandum to P. Wuerpel, Alaska Division of Emergency Services (ADES), 18 May 1989, no. C328, FOSC Exxon Valdez Archive.

36. CWO2 J. Janway, "Communications Matters 5/23/89" (conference call summary of Joint Communications Center personnel, 23 May 1989), no. C1770, FOSC Exxon Valdez Archive.

37. R. Black (Exxon), interview by Lt. Comdr. R. Gaunt, Anchorage, 27 Mar. 1992, no. F215, tape, FOSC Exxon Valdez Archive.

38. Ibid.

39. D. Bruce (ADEC), conversation record by Lt. Comdr. R. Gaunt, 23 July 1992, no. F776, FOSC Exxon Valdez Archive.



possible to talk directly to the Kodiak Incident Command Post (ICP), via hand-held FM radio, over distances as great as fifty miles.<sup>40</sup>

The systems that were emplaced in 1989 proved more than adequate to serve the communication needs of 1990 and later years in the response, and the large network of communications centers established in 1989 came to be substantially reduced. Beginning in 1990, the center of communications activity became the Joint Transportation Operations Center (JTOC) in Anchorage.

In addition to the numerous radio modes that served the response, Exxon provided INMARSAT terminals aboard major command and berthing vessels, thus establishing ship and shore telephone and facsimile capabilities. INMARSAT was a very valuable (though costly) resource for spill managers, permitting timely exchange of information from widely distributed areas of the response.<sup>41</sup>

Exxon served as the communications equipment procurement agent and systems manager for communications throughout the response. Exxon's acceptance of the role of primary communications manager had several advantages for the overall operation. All equipment that was added to existing systems was centrally procured in accordance with a single plan. Thus all communications centers would be equipped with compatible gear. Moreover, all equipment requests could be processed through the one source (Exxon) that had a straightforward and expeditious requisition system. Network startup could occur without substantial time loss or system service interruption.

#### OTHER COMMUNICATIONS ISSUES

It would, according to some observers, have been desirable to have been able to make use of electronic mail (E-mail) more extensively during the 1989 summer response. Software problems, an undersupply of technically capable personnel trained in the Coast Guard's standard workstation E-mail methods, and other difficulties plagued the system and frustrated users. Most users were forced to rely on facsimile transmission, a slower and more costly alternative. Telephone and radio modes were also used when E-mail transmissions might have been preferred, resulting at times in less accurate or no records of communications.<sup>42</sup>

Exxon needed substantial amounts of communication equipment for its spill response needs. About fifteen hundred hand-held radios were purchased and used as a part of the mobile communications network. The first purchase order was issued on 25 March, the day after the spill. A Motorola assembly plant, located in Illinois, hastily assembled a makeshift work crew consisting of supervisory personnel called from their homes on an Easter weekend. That group produced the first 150 hand-held radios and mailed them to Alaska on Sunday (Easter) afternoon. Motorola worked hard to furnish

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40. Comdr. D. Maguire, personal communication with Dr. T. Leschine (FOSC staff), 23 Mar. 1993. No written record exists.

41. Based upon a use rate of \$10 per minute, and an estimated 280,000 minutes of 1989 usage, the total usage cost of the INMARSAT system was estimated to be \$2.8 million.

42. The FOSC archives contain no E-mail products from ICPs which were dated earlier than fall 1989.

TABLE 15.1

## Communications Centers That Operated During the 1989 Exxon Valdez Oil Spill Cleanup

Communications Facility	Facility Function
Joint Communications Center, Valdez	Monitor all frequencies, coordinate emergency needs, maintain twenty-four-hour coverage, handle USCG oil spill related traffic.
Exxon Communications Center, Valdez	Provide cleanup dispatch operations and logistical traffic communication. Staffed by Exxon employees.
Exxon Controlled Area Flight Following	Aircraft reporting and tracking services.
ADEC Dispatch Center, Valdez	Dispatching service for ADEC operations.
(state of) Alaska Flight Planning Center, Valdez Airport (co-located with USCG Flight Planning Center)	Dispatching center for state of Alaska aircraft.
FAA, Valdez Tower, Valdez Airport	Air traffic control within Valdez Arm and Prince William Sound.
FAA Cordova Flight Service, Cordova Airport	Flight following, following FAA flight plan system.
Joint Communications Center, Seward	Dispatch for operations west to Gore Point and East to Blying Sound.
Joint Communications Center, Homer	Dispatch for operations west of Gore Point.
USCG Communications Center, MSO Valdez	Dispatch for non-oil spill USCG operations, monitoring emergency and working radio frequencies.
USCG Flight Planning Center (co-located with state of Alaska Flight Planning Center, Valdez Airport.)	Coordinated zone mission numbers and USCG aircraft. <sup>43</sup>

Source: G. Shuman, (Valdez Communications Center), "Exxon Valdez Oil Spill Incident Communications Plan," 29 Apr. 1989.

all of the radios that it could produce, but found it necessary to request a ten day respite, after about a month, so that it could replenish inventories and placate its normal customers.<sup>44</sup>

Coast Guard cutters from the 11th, 13th, and 17th Coast Guard districts served as on-scene command platforms during 1989 response operations. To permit those vessels to return to home districts, a system of rotations was arranged so that one or two cutters would be on hand at all times. One consequence was that as vessels arrived or departed, it proved necessary for communications personnel to visit the ship to install or remove INMARSAT or other temporary communications gear. Such tasks added to the burdens of communications technicians. Transition periods were somewhat

43. Exxon, "Joint Transportation Summer Operations Manual 1990," 1 May 1990, no. W941, FOSC Exxon Valdez Archive.

44. Black, conversation record, 13 Apr. 1993.

disruptive and could have been avoided had more permanent command platform facilities been available.

## SUMMARY

Despite the complications one would expect to encounter in attempting to establish large-scale operations in a remote area, workable arrangements were shaped relatively quickly in the areas of air and communications logistical support. Operations in these areas were generally free from the high-profile controversies that surfaced on so many other fronts. A suggestion made by an Exxon supervisor to explain this difference was that those who made important decisions in these areas tended to be technicians who brought a stronger emphasis on task resolution than did their more politically accountable counterparts in other areas.<sup>45</sup> The ability of technicians to work in harmony with one another on technical questions appears to have enabled many problems to be solved in relative isolation from larger political influences. There were highly visible exceptions of course, the primary one being the matter of the state developing its own communications system. Cooperation seems to have occurred only when it was to the mutual benefit of all parties to cooperate.

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45. Black, interview, 27 Mar. 1992. "Between professionals among telecommunications people, it was not an incriminous relationship," reported Bob Black, Exxon's communications director. "We kept it on a professional basis. I say that with a certain amount of pride," he stated.

## CHAPTER 16. VESSEL SUPPORT

### OVERVIEW

The degree of reliance on vessels is apparent in both the number of vessels involved in the response (over fourteen hundred in 1989) and in the diversity of the roles they filled. Services that are normal parts of infrastructure (transportation, sewage, drinking water, electricity, and shelter) all had to be provided in a remote location. No oil spill contingency plan ever envisioned an effort of this scope. The result was an unprecedented buildup of vessels in response to an oil spill. This chapter details the reliance on vessels and the challenges associated with quickly assembling so many vessels from a diversity of sources to meet a broad spectrum of needs for the cleanup.

### BACKGROUND

Over fourteen hundred vessels were used in the 1989 cleanup season. The remoteness of location and lack of roads and infrastructure in the response area created an unprecedented reliance on vessels to support the cleanup. Nearly all service, housing, and food supply needs for day-to-day operations were met through use of vessels. Vessels provided cleanup platforms, command centers, transportation for workers, temporary storage of recovered oil, supply delivery, berthing, and repair and maintenance support.

Floating oil operations were almost entirely vessel-based. These included all skimming operations, boom deployment, and the small amount of in-situ burning that took place. Virtually all of the shoreline cleanup operations that took place during the four years of field activity used vessel platforms. (Exceptions involved certain limited functions performed via air operations.) There can be little argument that vessels formed the dominant transportation mode of the *Exxon Valdez* response.

From the onset of the response, the ability to acquire the right type of vessels in sufficient numbers was a problem. Specialized vessels are necessary to carry out a large-scale cleanup operation and few were available in Alaska (figure 16.1). While Exxon searched for skimmers, barges, and other support vessels, the Coast Guard directed a number of Coast Guard vessels to the scene. The USCGCs *Rush*, *Morganthau*, *Storis*, *Yacona*, *Sweetbrier*, *Ironwood*, *Sedge*, and *Plaintree* (table 16.1) all played key roles in the early stages of the response. The Coast Guard dispatched to the early response vessels with sophisticated communication capabilities and the ability to work in a coordinated fashion.

As Exxon was able to locate and contract its own support vessels, the Coast Guard vessels were released from the response to be returned to routine duties. However, difficulties in finding and holding the right vessels continued throughout the 1989

cleanup operation. Even with Exxon's resources, delays were encountered in locating and mobilizing key support vessels.<sup>1</sup>

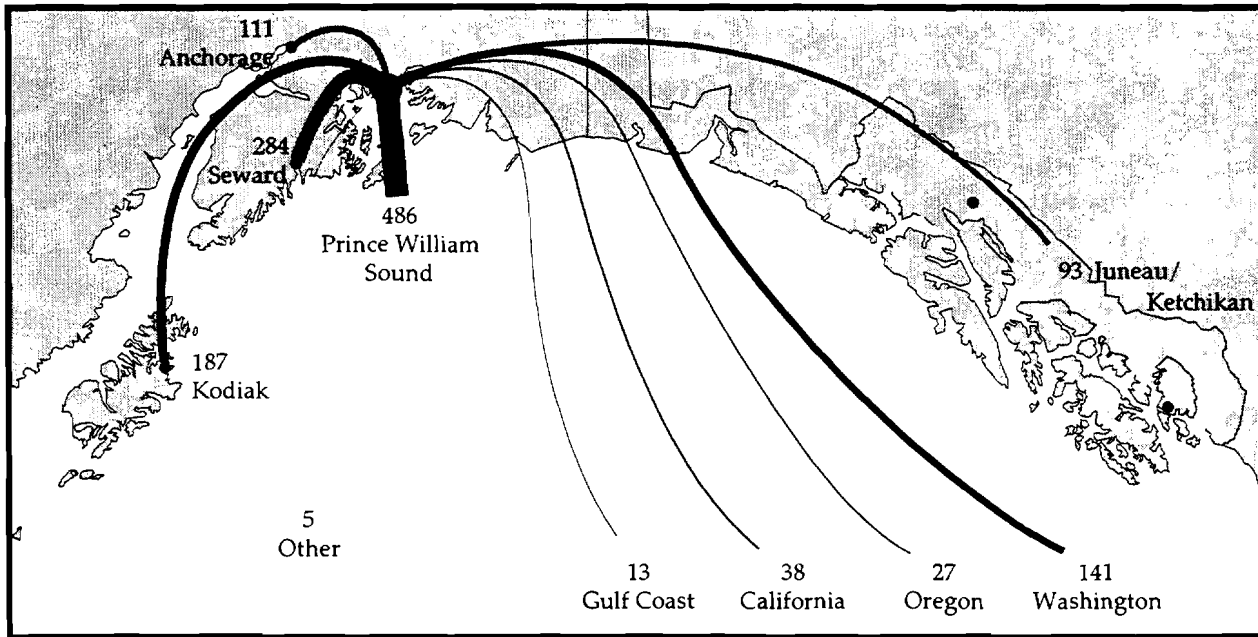


Figure 16.1. Homeports, and approximate numbers of response vessels (other than Coast Guard vessels) used during the *Exxon Valdez* spill response.

Source: Reproduced with permission from Exxon Co., USA.

With the shift from floating oil operations to shoreline cleanup, Exxon found itself significantly increasing its own estimates for specialized vessels to deal with shoreline cleanup. Exxon increased its estimated need for landing craft from thirty-three to fifty and for maxi-barges<sup>2</sup> from thirteen to twenty.<sup>3</sup> Contracting for the vessels and outfitting them in a timely manner was a significant challenge. However, a number of sources of oil spill-ready equipment were available to Exxon.

In the United States, significant spill response capacity rests with the Coast Guard, the U.S. Navy, the Army Corps of Engineers, and with industry cooperatives. The nation's oil spill response equipment is widely distributed throughout the country, however. The nation's largest equipment arsenal for fighting offshore oil spills is controlled by the U.S. Navy. U.S. Navy response equipment is primarily intended for use in spills involving U.S. Navy operations. In an emergency, such as a large domestic spill, U.S. Navy response gear is considered to be a national resource available for cleanup operations. U.S. Navy equipment was concentrated at Williamsburg, Virginia, and at Stockton, California, with a smaller supply at Honolulu.<sup>4</sup> Naval equipment was on

1. Vice Adm. C. E. Robbins, letter to O. Harrison (Exxon), 17 Apr. 1989, no. C625, FOSC Exxon Valdez Archive.

2. These barges supplied high pressure hot water used in shoreline cleanup.

3. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 24 May 1989, no. C321, FOSC Exxon Valdez Archive.

4. Alaska Oil Spill Commission, Implications for Safe Transportation of Oil, in "Spill: The Wreck of the Exxon Valdez," Feb. 1990, no. W1593, FOSC Exxon Valdez Archive, 89.

hand early in the spill, and eventually came from both major depots. A total of twenty-two U.S. Navy skimmers served in the 1989 response. In addition, the U.S. Navy provided critically needed berthing facilities for shoreline workers and assorted landing craft. The early arrival of Navy vessels was critical to the rapid expansion of cleanup operations that occurred.

TABLE 16.1

Coast Guard Vessels Involved In 1989 Exxon Valdez Spill Response.

Vessel	Type	Home Port	Work Periods and/or Function
CGC <i>Rush</i>	378 HEC	Alameda, CA	Early arrival. Established ATC platform in PWS. Was project's "Plank Holder" with two months on scene.
CGC <i>Morganthau</i>	378 HEC	Alameda, CA	Mid through late April. WAK area, coordinated overflights, supported oil recovery operations and worked with M/V <i>Vayda Ghubsky</i>
CGC <i>Midgett</i>	378 HEC	San Francisco, CA	Limited appearance late-April
CGC <i>Jarvis</i>	378 HEC	Honolulu, HI	Limited appearance in April.
CGC <i>Storis</i>	210 MEC	Seattle, WA	GOA operations during most of April. Helped with boom transport.
CGC <i>Resolute</i>	210 MED	Astoria, OR	Arrived late in July, only assigned CG vessel for most of latter stages.
CGC <i>Yacona</i>	210 MEC	Kodiak, AK	Arrived mid-April. Oil recovery and fishing vessel monitoring. Departed for patrol duties early May.
CGC <i>Venturous</i>	210 MEC	Terminal Is., CA	Relieved CGC <i>Resolute</i> in September, remaining till demobilization.
CGC <i>Active</i>	210 MEC	Port Angeles, CA	Present for several weeks from late May through late July.
CGC <i>Plaintree</i>	180 SBT	Ketchikan, AK	WAK boom movement and placement, mid through late April.
CGC <i>Iris</i>	180 SBT	Astoria, OR	April work in both WAK and PWS. Skimming operations and support of shoreline teams.
CGC <i>Sweetbrier</i>	180 SBT	Cordova, AK	Performed ATC duty in PWS. Involved in hatchery protection projects. Safety zone enforcement at T/V <i>Exxon Valdez</i> .
CGC <i>Ironwood</i>	180 SBT	Kodiak, AK	Arrived early. Prominent in Sawmill Bay booming project.
CGC <i>Sedge</i>	180 SBT	Homer, AK	Early skimming duties. Returned to ATON tasks in mid-April.
CGC <i>Mustang</i>	110 WPB	Seward, AK	Assigned to spill ops late in May. On JTF assets list for about one week.

Source: FOSC Polreps.

## THE INITIAL RESPONSE

Twenty-five vessels, including Alyeska's tugs and skimmers, were deployed on the first day of the spill.<sup>5</sup> While the number of vessels is impressive by the standards of smaller spills, there were several significant problems with the initial response. The first vessels to arrive on scene appeared several hours later than was specified in the Alyeska spill contingency plan. Nor did the first day's fleet contain the mix of vessels necessary to mount an effective response. Once the relatively small skimmers that arrived found themselves filled to capacity, there was no barge into which recovered oil could be offloaded. Seventeen of the vessels present were fishing vessels which could not do the work of the specially designed skimmers and oil storage vessels that were among the most critical needs of the moment.<sup>6</sup>

The buildup was moving too slowly for many critics, particularly those who were spokesmen for the state of Alaska. The Coast Guard also had concerns.<sup>7</sup> Equipment was arriving daily, but it consisted of gear, and not major response vessels. On 1 April the Coast Guard reported that eighty-five vessels were active in the cleanup. Just thirteen of those were skimmers, however. Although the exact makeup of the remainder of the vessel roster is not clear, it seems probable that it consisted largely of fishing vessels.<sup>8</sup> The "mosquito fleet," consisting of fishing vessels deployed from Cordova to protect three Prince William Sound salmon hatcheries and numbering around fifty vessels, had been organized by local fishermen by that time.

In order to mobilize quickly a large fleet of response vessels, Commander McCall at MSO Valdez issued a 1 April letter which permitted "uncertificated" vessels to engage in the carriage of freight and cargo. McCall appeared reluctant to encourage use of uninspected vessels as passenger vessels. ("Requirements for operators of vessels carrying six or more passengers for hire should be complied with *when at all possible*."<sup>9</sup>) When operations stabilized, Captain G. E. Haines, Seventeenth Coast Guard District chief of marine safety, notified Exxon that "since response operations are now in their eighth week, the oil spill emergency has evolved to a situation where use of these uncertificated vessels should be addressed in an orderly and logical manner in order to insure some minimal level of safety." After May 19, Haines declared, requests for use of noncertified vessels would only be considered on a case-by-case basis.<sup>10</sup>

Nearly two weeks into the response, vessel help was still on its way to Alaska. Twenty-one skimmers were then en route from other areas.<sup>11</sup> An offer of additional assistance came from the Soviet Union, in the form of a huge oil skimming vessel, the M/V *Vayda Ghubsky*. After considerable discussion through diplomatic channels, Exxon entered into an agreement to bring the *Vayda Ghubsky* to the response. The vessel

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5. Alaska Oil Spill Commission, 23.

6. USCG Pollution Report O 271050Z March 1989 (PWS Polrep 7), sec. (1)(D).

7. Vice Adm. C. E. Robbins, letters to O. Harrison (Exxon), 9 May 1989, no. C69; and 17 Apr. 1989, no. C625, FOSC Exxon Valdez Archive.

8. FOSC Public Affairs, "T/V Exxon Valdez Fact Sheet," 1 Apr. 1989, FOSC Exxon Valdez Daily Archive.

9. Comdr. S. A. McCall, letter to F. Iarossi (Exxon), 1 Apr. 1989, no. C665, FOSC Exxon Valdez Archive.

10. Capt. G. E. Haines, letter to O. Harrison (Exxon), 19 May 1989, no. C324, FOSC Exxon Valdez Archive.

11. FOSC Public Affairs, "T/V Exxon Valdez Fact Sheet," 5 Apr. 1989, FOSC Exxon Valdez Daily Archive.

arrived on 19 April and remained in the operations area for about one month. Hindered by adverse weather conditions and thickened, hard-to-recover oil, it experienced limited success.<sup>12</sup>

#### THE 15 APRIL PLAN: ESCALATING FIELD OPERATIONS

On 15 April, Exxon issued its first formal cleanup plan. It was forecast that shoreline operations would require 4,000 workers, and a vessel complement consisting of 11 barges, 28 landing craft, 150 landing vessels, and 6 washer/vacuum units.<sup>13</sup> An important assumption made by Exxon's planners was that "no additional oiling/re-oiling will occur."<sup>14</sup>

By this time, the field cleanup organizational structure had begun to stabilize. Berthing space was still limited, as less than 20 percent of the vessel buildup had been completed, and Exxon's plan was still being pieced together. However, tank barges had begun to arrive, several tugs had reported for duty, and specialized landing craft were available for shoreline operations. Seven berthing vessels were now present, while additional vessels were in transit.<sup>15</sup>

#### SHORELINE CLEANUP PHASE

By late April, Exxon's field operations had begun to show the organizational structure that would be used throughout the summer months. Field operations were structured into a number of task forces, eventually covering both Prince William Sound and western Alaska work areas. Two such task forces were now functioning in Prince William Sound.<sup>16</sup> Ultimately, six large task forces, each typically requiring more than one hundred vessels, were organized.<sup>17</sup> Like divisions of an army, they could be moved about, independently from one another, thus facilitating a multifront cleanup.

Exxon soon upgraded its operations plan, issuing a new document on 1 May. Following several developments during the last two weeks of April, Exxon made changes that permitted its program to be accelerated somewhat. Most notably, strategic cleanup equipment, especially landing craft vessels (LCVs) and "maxi-barges," became available sooner than expected. Exxon projected that it could increase its shoreline forces about fivefold during the month of May.<sup>18</sup>

As the cleanup geared up, the buildup of vessels in the Exxon fleet grew rapidly. The seven hundred mark was passed in mid-May. At the end of June, a thousand vessels were present. A peak of 1,464 was reached early in August (figure 16.2)

12. For a fuller discussion of the role the *Vayda Ghubsky* played in the cleanup, see chapter 3, "Floating Oil Operations."

13. Exxon, "Shoreline Cleanup Execution Plan," 15 Apr. 1989, sec. G, no. C990, FOSC Exxon Valdez Archive.

14. *Ibid.*, sec. B.

15. Exxon, "Operation Status as of 0800 Hours" (logistics update, 15 April 1989), FOSC Exxon Valdez Daily Archive.

16. Exxon, daily reports for 23 Apr. 1989, 24 Apr. 1989, and 27 Apr. 1989, FOSC Exxon Valdez Daily Archive.

17. A. D. Carpenter, R. Dragnich, and M. T. Smith, "Marine Operations and Logistics During the Exxon Valdez Spill Cleanup," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 205.

18. Exxon, "Shoreline Restoration Plan," 1 May 1989, sec. 2, no. C1486, FOSC Exxon Valdez Archive.



To meet its cleanup needs, Exxon found it necessary to employ many different types of vessels. Table 16.2 provides a profile of the diversity of vessels which were required for support of a single task force. Although the makeup of support fleets varied from day-to-day, the figures provided represent what might have been found in a typical 1989 task force.

### TASK FORCE ORGANIZATION

Exxon began structuring its field operations into task forces in April.<sup>19</sup> At the peak of early August operations, six major task forces were operating in Prince William Sound, and a number of smaller task forces were operating in western Alaska. Although vessel complements for these groups varied from day-to-day and from place to place, a "typical" task force relied on a fleet of about 104 vessels to carry out its mission (table 16.2).

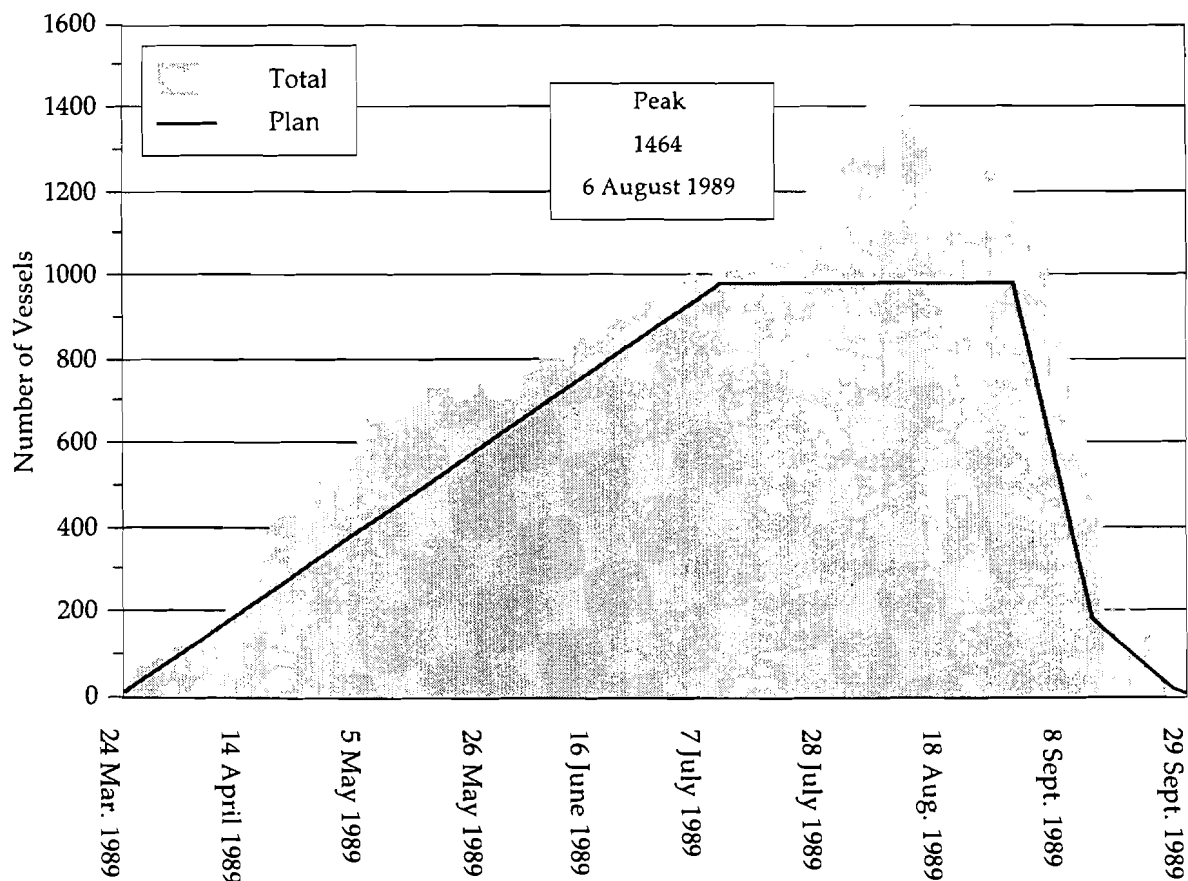


Figure 16.2. Buildup of vessels in 1989.

Source: Reproduced with permission from Exxon Co., USA.

19. This portion of the chapter will focus primarily upon the arrangements that prevailed in Prince William Sound.

## CREW TRANSFER VESSELS

Chartered fishing vessels, ranging in size from twenty-four to forty feet, moved personnel from berthing vessels to work stations, between command centers, production and support vessels, and on a variety of other short trips. A variety of other craft, ranging from inflatable rubber runabouts to fairly large sea-going crew boats, also served as transfer vessels. Often crew transfer vessels were assigned other duties, such as transferring refuse, moving supplies, or tending boom.<sup>20</sup> Shuttle services, employing higher speed craft, provided a transportation link between task forces and shore-side facilities.<sup>21</sup>

## SHORELINE TREATMENT VESSELS

This category included an assortment of landing craft and barges rigged with pumps, boilers, and spray apparatus. These shallow-draft vessels were moved close to shorelines where their equipment could be used to remove oil. At the peak of operations, eighty-seven vessels had been equipped for such purposes (sixty-one landing vessels and twenty-six barges). The construction work to produce these vessels was performed at Seattle, Ketchikan, and Valdez. Treatment vessels fell into three major categories, maxi-barges, mini-barges, and omni-barges.

*Mini-barges.* The category includes all of the landing craft outfitted with cleanup equipment. At least thirty military landing craft, medium (LCM) vessels were on hand through most of the summer. Sixteen of these were from the U.S. Navy, while the remainder belonged to the Army National Guard, and the U.S. Army Reserves.<sup>22</sup> Exxon procured 50–60 percent of its landing craft from sources outside the U.S. military, however.<sup>23</sup> There were two types of mini-vessels: “hot” minis and “cold” minis. Both types were set up to provide high-pressure water streams, but the difference was that “hot” vessels were also equipped with industrial boilers that produced heated water. The first mini-barge operations began about a month after the spill; it was not until July that “hot” minis began to operate. Of the sixty-one mini-barges that saw shoreline service, about a dozen were rigged for hot water production.<sup>24</sup> Mini-vessels, with their shallow drafts, were favored when the project required getting equipment very close to shorelines.

*Maxi-barges.* Maxis were large, conventional barges equipped with heavier pumping equipment. While they were less able to work close to shorelines, they offered greater washing capacity, and they had the advantage of being equipped with man-lifts.<sup>25</sup> Maxi-barges were also equipped with hoses that could be hand-held by workers on shorelines. The first maxi-barges went into service late in May; eventually their

20. Carpenter, Dragnich, and Smith, 207.

21. Exxon, “Valdez Oil Spill Technology 1989 Operations,” 1 June 1990, no. W1750, FOSC Exxon Valdez Archive, 85.

22. Headquarters Alaskan Command (Elmendorf Air Force Base, Alaska), JTF Situation Report 087 to director of military support-JTF, 19 Sept. 1989.

23. Carpenter, Dragnich, and Smith, 207.

24. Exxon, “Valdez Oil Spill Technology 1989 Operations,” 63. As 1989 operations were completed, Exxon provided refurbishment of military barges that it used.

25. A man-lift was a crane-borne crows nest that was useful for reaching hard-to-get-at places such as steep rockfaces.

number grew to thirteen.<sup>26</sup> Maxi-barges varied in length from 128–140 feet, and in width from 33–54 feet. They were a cleanup mainstay, proving particularly useful on long, open shorelines.<sup>27</sup> They had the disadvantage of needing the assistance of a tug to be moved.

TABLE 16.2

Typical Task Force Vessels			
Logistics Vessels	Number*	Shoreline Vessels	Number
Berthing Vessels	3	Omni-barges	2
Tugs	5	Maxi-barges	2
Supply Barge	1	Mini-barges	8
Shower/Wash Barges	2	Seiners	2
Tenders/Landing Craft	12	Sorbent Boom	
Oily Trash (2)		Bowpickers	12
Domestic Trash (2)		Containment & Sorbent	
Oily Water (2)		Skimmers	5
Sewage (1)			
Materials (2)		<b>TOTAL</b>	31
Water (1)			
Food/Fuel (1)		Skiffs	20
Personnel Shuttle (1)			
Boom Storage (1)		<b>TOTAL WITH SKIFFS</b>	51
Crew Boats	3		
Seiners	6		
Food/Fuel (3)			
Personnel Shuttle (1)			
Oily Water (1)			
Domestic Trash (1)			
Bowpickers/Cruisers	21		
Personnel Shuttle (13)			
Safety/Medical (4)			
Materials Supply (2)			
Security (1)			
Crawford Monitor (1)			
<b>TOTAL</b>	53		

Source: Exxon, "Valdez Oil Spill Technology 1989 Operations," 1 June 1990, W1950, FOSC Exxon Valdez Archive.

\* Numbers reflect average composition. Vessel types and numbers varied from task force to task force and from day-to-day.

26. Exxon, "Valdez Oil Spill Technology 1989 Operations," 61 and 63.

27. Carpenter, Dragnich, and Smith, 207.

*Omni-barges.* Thirteen omni-barges served in the response, with the first beginning to function around 1 May (figure 16.3). The omni-barge fleet was at full strength by mid-June.<sup>28</sup> They consisted of interlocking barge components built into vessels that were 115–140 feet long and about 40 feet wide. Omni-barges had substantial water-heating capacity, and could deliver large volumes of high-pressure water through an “omni boom” (made from a converted concrete-pumping unit) to a spray head at the work area.<sup>29</sup> The moveable boom permitted wide-swath cleaning and access to hard-to-reach areas. All but one of the omni-barges were capable of self-propelled movement. Omni-barges were judged by Exxon to be two to three times as effective as the maxis and the minis.<sup>30</sup>

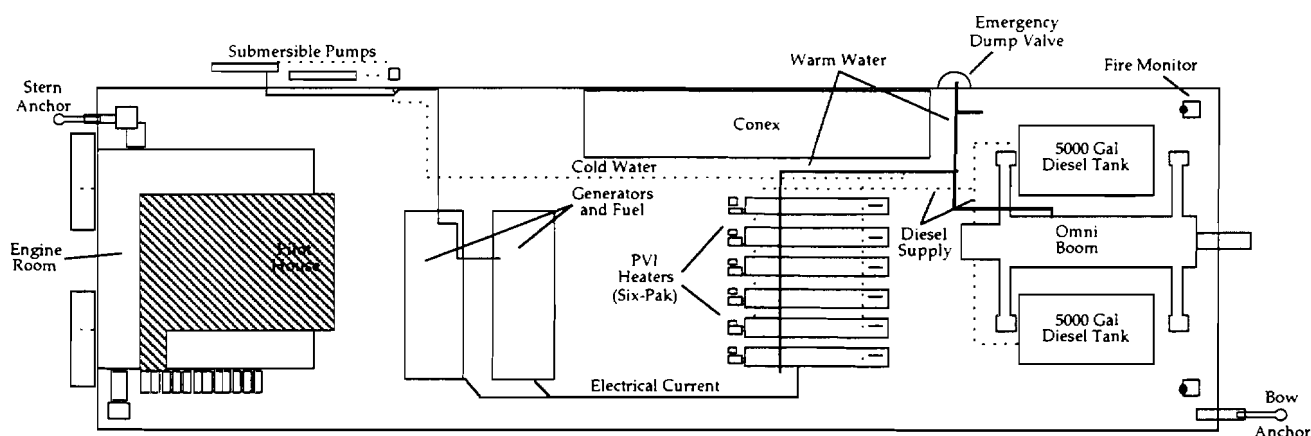


Figure 16.3. Schematic representation of an omni-barge.

Source: Reproduced with permission from Exxon Co., USA.

*Bioremediation vessels.* After a series of tests, Exxon began to utilize bioremediation agents on impacted shorelines. Six “cold minis” were converted for use as bioremediation vessels. Water pumping and spraying apparatus was removed, and replaced with chemical tanks, heaters, and spraying devices. Since there were some places that could not be accessed by bioremediation barges, a few pontoon vessels were rigged with similar equipment and sent, as needed, into the more problematic reaches.<sup>31</sup>

*The Essayons and the Yaquina.* Two Army Corps of Engineers (COE) dredge vessels, *The Essayons* and the *Yaquina*, arrived in the response area on 18 and 20 April, respectively. Army Corps of Engineers’ vessels came to the spill in response to a request from Lieutenant General Thomas McNerney, defense senior representative to the Joint Task Force. General McNerney made the request following discussion and coordination with the 17th CGD and the Federal On Scene Coordinator (FOSC).

28. Exxon, “Valdez Oil Spill Technology 1989 Operations,” 63.

29. *Ibid.*, 59.

30. *Ibid.*, 75–76.

31. Carpenter, Dragnich, and Smith, 208.

The vessels would be under operational control of the Coast Guard and supported by the Alaskan district, Army Corps of Engineers.<sup>32</sup>

There was some question about the suitability of the COE dredges for the task of recovering spilled oil.<sup>33</sup> Adapting the vessel dredge heads for skimming oil was problematic and not particularly successful.<sup>34</sup> Between the two COE dredges, nearly seven thousand barrels of oil were recovered, but as floating oil operations diminished, early in June, it was apparent that corps vessels were no longer needed, and they returned to west coast ports.<sup>35</sup>

#### OTHER VESSELS IN THE RESPONSE

*Repair vessels.* Two floating dry docks were established in Prince William Sound. Each was equipped with a crane, and the means to perform major repairs if necessary. Repair vessels performed work on 460 vessels during the 1989 cleanup season. Most of the work involved hull, engine, propeller, or drive line repairs. Mobile repair vessels were also established. The *Arctic Tuktu*, for example, provided on-scene maintenance and repairs for skimmers.<sup>36</sup> (Getting parts for malfunctioning or broken skimming gear often led to serious delays, however.)<sup>37</sup> Mobile outboard motor repair was provided by small vessels and pontoon boats.<sup>38</sup> These vessel repair centers served throughout the summer of 1989, but were not mobilized in later years.<sup>39</sup>

*The medical barge.* Exxon also established a mobile medical clinic. Constructed aboard the *Miller 205* barge, it was well staffed and equipped, with x-ray, emergency, and limited surgical capabilities. A physician was available at all times.<sup>40</sup> More serious problems would be stabilized at the medical barge, then flown to a cooperating hospital. More than sixteen hundred patients were seen at the barge-based clinic during 1989.<sup>41</sup>

*The popweed barge.* Exxon's abortive attempt to capture and wash floating oiled kelp (discussed in chapter 13, "Waste Management") resulted in the outfitting and deployment of a 242-foot barge, equipped with hot water washing equipment, and a 180-foot hopper barge, which was to be used for storage of the cleaned plant material.

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32. Headquarters Alaskan Command (Elmendorf Air Force Base, Alaska), JTF Situation Report 006 to director of military support-JTF, 14 Apr. 1989.

33. The work of the vessels is discussed at greater length in chapter 3, "Floating Oil Operations."

34. Exxon, "Valdez Oil Spill Technologies 1989 Operations," 43–44. Once it was determined that using dredge heads in an upside-down sumping procedure worked reasonably well, COE vessels did their best work. They could both decant, and hold large capacities.

35. Headquarters Alaskan Command (Elmendorf Air Force Base, Alaska), JTF Situation Report 050 to director of military support-JTF, 31 May 1989. Amounts reported included 4,726 barrels by the *Yaquina*, and 2,178 by the *Essayons*, a total of 6,904 barrels. The report does not specify if the totals included actual oil, or if the product was actually some sort of oily mix. Cleaning the vessels proved to be a substantial task. The *Yaquina*, for example, was listed as "in dock at Seward undergoing cleaning" from 26 May through 7 June.

36. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 22 Apr. 1989, no. C246, FOSC Exxon Valdez Archive. The *Tuktu* was a Canadian flag vessel, thus it needed Jones Act waiver to participate in cleanup operations. It was equipped with maintenance and machine shop facilities.

37. Exxon, "Valdez Oil Spill Technologies 1989 Operations," 48.

38. *Ibid.*, 85.

39. O. Harrison (Exxon), conversation record by Lt. Comdr. R. Gaunt, Anchorage, 29 Dec. 1992, no. F726, FOSC Exxon Valdez Archive.

40. F. Brauer (Exxon), interview by Lt. Comdr. R. Gaunt, Anchorage, 19 Mar. 1992, no. F216, FOSC Exxon Valdez Archive.

41. Exxon, "Valdez Oil Spill Technologies 1989 Operations," 95.

Other vessels were assigned to the project to locate and gather the contaminated plants and deliver them to the washer barge. Only small amounts of contaminated seaweed were found, however, and the operation was discontinued after about a month.<sup>42</sup> The main barge (the *Hanalei*) later saw service in cleaning contaminated oil boom.

*Recovered-oil storage barges.* Tank barges arrived relatively early to the response. They were crucial during floating oil operations, since, unless skimmers could be unloaded, they had to return to shore when filled. Initially, recovered oil was stored in "anything that was available," as Exxon put it.<sup>43</sup> Three U.S. Navy Dracone barges were used to store oil skimmed by U.S. Navy Marco V skimmers. The problems they had are illustrative of the difficulties encountered in dealing with recovered oil and water mixes once they were onboard. It was found to be very difficult to remove the thickened oil from these barges, and while a solution was being worked out, volatile gases from the crude and from decomposing plants formed hazardous concentrations. Though they were successfully emptied, the Coast Guard would not approve further use of the same equipment.<sup>44</sup>

The backbone of Exxon's recovered-oil storage/transport operations was five large tank barges. These vessels ranged in size from twenty-five to fifty thousand barrels.<sup>45</sup> About 130,000 barrels of oil/water emulsions were recovered during the 1989 cleanup, most of it ultimately transported to Seattle, Washington or to Baytown, Texas for processing.

*Supply vessels.* Each task force had dedicated supply vessels to furnish food, water, and other needs. In April, as operations were gearing up, fourteen vessels served as dedicated "supply" or "freight" handlers. Some were as small as 41 feet in length, while others ranged to 160 feet.<sup>46</sup> As events went forward, there was a trend towards use of vessels with large, open deck areas, lengths of 160–180 feet, and with a capability of twenty knot speeds, as supply vessels. Such vessels made regular runs to Valdez, the loading point for stores of food, water, and other supplies. In the field, smaller boats made short-haul deliveries. In western Alaska, where work groups were smaller, smaller supply boats made regularly scheduled runs. Five such vessels from Kodiak, for example, were able to furnish the needs of the nineteen different work groups that constituted Task Force Kodiak.<sup>47</sup>

*Fueling Stations.* At the peak of operations, daily fuel consumption per task force (in Prince William Sound) was seventeen thousand gallons. Exxon established two fueling stations in the sound. The presence of these facilities helped keep vessels in the field, improving efficiency by eliminating the need for long trips for refueling or to carry fuel to where it was needed. One of the facilities consisted of a single barge with diesel fuel only. The other provided diesel fuel, gasoline, jet fuel, and low-lead

42. R. Carpenter (Exxon), letter to J. Brady et al. (ADF&G), 26 July 1989, no. C1143, FOSC Exxon Valdez Archive.

43. Exxon, "Valdez Oil Spill Technology 1989 Operations," 42.

44. Ibid.

45. Carpenter, Dragnich, and Smith, 208.

46. Exxon, "Oil Spill Recovery Equipment" (operation status as of 0800 hours, 21 Apr. 1989), FOSC Exxon Valdez Daily Archive.

47. Exxon, "Valdez Oil Spill Technology 1989 Operations," 90–91.

aviation gasoline. Lubricants and hydraulic oil were also available at the second facility, as was a barge with landing space for helicopters.<sup>48</sup>

Fuel was generally delivered from these facilities to task force vessels for on scene refueling. Two vessels were outfitted to deliver propane for response area use. Because of the hazardous nature of this product, the delivery vessels required Coast Guard approval.<sup>49</sup>

*Tug boats.* Exxon employed a large number of tug boats for its field operations. Their major function was to tend the many barges used as supply platforms, specialized work stations, and berthing vessels. Unlike all but one of the omni-barges, maxi-barges were not self-propelled. Thus tugs were required for their movement. For safety reasons, tugs were also assigned to stations near berthing vessels, to guard against the failure of the mooring systems, as might have been the case in a severe storm.<sup>50</sup> Tugs also assisted in the handling of boom. The tug boats used ranged in size from small 500 horsepower harbor tugs to 11,500 horsepower ocean-going tugs.<sup>51</sup>

*Sewage and water supply vessels.* A shuttle system was established between task force areas and the city docks in Valdez in order to transport sewage wastes. By mid-May, when about eight thousand of the eventual eleven thousand-worker contingent was employed, Exxon and VECO had ten vessels dedicated to sewage shuttle services. These vessels ranged in size from around ten thousand gallon capacity to the *Red Jacket*, a 160-foot chartered supply vessel capable of carrying fifty thousand gallons of wastes.<sup>52</sup>

These transfer vessels encountered delays at dockages owing to congestion and limited pumping capacity. The emplacement of a specially constructed floating sewage treatment lagoon near Knight Island, in late June, greatly reduced the need for ship-to-shore transfer of waste.<sup>53</sup>

#### BERTHING VESSELS

*Naval vessels.* Until satisfactory berthing arrangements could be established for field workers, shoreline cleanup operations were seriously limited in scope. Sufficient shore-side facilities were simply not available, and the distances from existing towns were too great for efficient work. It was imperative that workers be lodged in the field, close to work sites. In April, as shoreline operations gained momentum, berthing vessels began to be relied upon, particularly in Prince William Sound where the largest work forces were.<sup>54</sup> Among the larger vessels then available to meet berthing needs

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48. Ibid.

49. Ibid.

50. Carpenter, Dragnich, and Smith, 207.

51. Exxon, "Valdez Oil Spill Technology 1989 Operations," 86.

52. R. Coleman (Exxon), letter to Vice Adm. C. E. Robbins, 16 May 1989, no. C212, FOSC Exxon Valdez Archive.

53. According to Exxon's reports, 260,000 barrels of sewage wastes were treated at the floating lagoon during the period between late June and mid-September.

54. Exxon, "Operation Status as of 0800 Hours" (logistics update, 15 April 1989). The report showed seven berthing vessels among the 297 craft in the fleet. Based upon later bed counts, it seems likely that the mid-April bed capacity was around 300.

were four commercial cruise/excursion vessels. These were quickly mobilized, though they had general limitations, necessitating substantial support.<sup>55</sup>

On 24 April, Exxon's berthing capacity was substantially enlarged through the arrival of three sizable U.S. Navy vessels, including the USS *Juneau*, a U.S. Navy Landing Personnel Dock-10 (a troop carrier vessel). The *Juneau* provided four hundred additional beds, and brought with it nine additional landing craft. It provided an adequate, if not ideal, solution for Exxon's worker berthing needs. Shoreline workers complained of crowding in the rather spartan quarters the *Juneau* provided. The *Juneau* was assigned to Prince William Sound "Task Force Two," where it stayed through the end of May, when the USS *Cleveland* arrived to replace it. The USS *Ft. McHenry*, which arrived in May, served "Task Force Three."

These large naval vessels proved to be essential to the shoreline clean up effort. Exxon showed constant concern for any status change in these vessels that might affect its ability to keep the clean up on schedule. Exxon's upgrade of its 1 May plan projected that "2 to 3 day loss[es] of productive capacity" would be experienced when berthing vessels were rotated by the U.S. Navy.<sup>56</sup> When, on 16 May, the USS *Juneau* was moved by its U.S. Navy crew to a new location, the timing of the vessel's movement apparently meant that workers arrived at their new location too late to commence shoreline operations on the same day. "We lost a beautiful day in the process," wrote Exxon's general manager, in a letter of complaint to the FOSC.<sup>57</sup>

The U.S. Navy's plans to rotate the *Juneau* and *Ft. McHenry* with other vessels led Exxon to complain that as many as fourteen hundred man-days of work could be lost during transfer operations, depending upon how the changes were made.<sup>58</sup> Exxon threatened to phase out *Juneau*-type vessels rather than be held hostage to U.S. Navy transfer operations. They are "cramped and Spartan, at best," observed Otto Harrison.<sup>59</sup> As events developed, however, the USS *Juneau* change out went smoothly, with only minor disruptions of cleanup operations and ship's routine. The transition was completed within a six hour period.<sup>60</sup> Exxon continued to seek other alternatives to replace U.S. Navy vessel berthing, however.

Berthing vessel rotations continued into the summer. The USS *Ogden* arrived to replace the USS *Cleveland* on 9 July.<sup>61</sup> The *Mt. Vernon* was scheduled for a mid-July rotation when Exxon informed the FOSC that replacement berthing was en route.<sup>62</sup>

55. Exxon, "Valdez Oil Spill Technology 1989 Operations," 84.

56. Exxon, "Exxon Shoreline Cleanup, May 1 Plan Upgrade," 24 May 1989, no. C436, FOSC Exxon Valdez Archive, 1.

57. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 17 May 1989, no. C138, FOSC Exxon Valdez Archive.

58. It would cost seven hundred man-days if the transfer were to be made offshore. If it became necessary to move to dockage at Valdez, two more days would be required, according to Exxon's forecasts.

59. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 16 May 1989, no. C132, FOSC Exxon Valdez Archive.

60. Headquarters Alaskan Command (Elmendorf Air Force Base, Alaska), JTF Situation Report 051 to director of military support-JTF, 1 June 1989. Subsequently the USS *Mt. Vernon* rotated smoothly into relief of the USS *Ft. McHenry* (Headquarters Alaskan Command [Elmendorf Air Force Base, Alaska], JTF Situation Report 058 to director of military support-JTF, 9 June 1989). Once again a smooth transition was accomplished, reportedly with "no interruption to oil spill cleanup as a result of this turnover."

61. Headquarters Alaskan Command (Elmendorf Air Force Base, Alaska), JTF Situation Report 075 to director of military support-JTF, 10 July 1989. The report also states that the USS *Cleveland* took with it several U.S. Navy skimmers.

62. M. J. Friesenhahn (Exxon), letter to Vice Adm. C. E. Robbins, 6 July 1989, no. C822, FOSC Exxon Valdez Archive.



Exxon was finally in a position to begin phasing out U.S. Navy berthing vessels. The FOSC accepted Exxon's phase-out plan, and notified the Joint Task Force Center that the *Mt. Vernon* could be released without relief.<sup>63</sup> The USS *Ogden* remained on assignment through mid-August, taking eight U.S. Navy skimmers along as it departed. It was relieved by the USS *Duluth* on 16 August. The USS *Duluth* remained until the general demobilization of mid-September, departing on 16 September with several U.S. Navy landing craft and assorted other U.S. Navy equipment on board. The U.S. Navy's berthing and support mission was complete.<sup>64</sup>

U.S. Navy vessels provided seven to eight hundred sleeping spaces at a crucial time when Exxon lacked other options. This permitted shoreline cleanup operations to gear up at an accelerated pace. They brought with them landing craft that also served the cleanup in a strategic manner. Offsetting these advantages were the difficulties caused by other operational commitments which necessitated frequent rotation.

*Camp Barges.* The majority of long-term berthing for shoreline workers was provided by what came to be referred to as "camp barges." These consisted of prefabricated buildings aboard large barges moored in sheltered bays and coves near work sites.<sup>65</sup> Camp barges were outfitted at shipyards, first with plumbing and electrical systems, then with prefabricated structures mounted on the decks. Because camp barges were considered "facilities" rather than vessels, they were subject to the same food service, waste water, and fresh water health and safety requirements as onshore commercial facilities.<sup>66</sup> Camp barges became the focal points of complexes which supported many functions. Exxon set up about fifteen such barge facilities.<sup>67</sup>

*Other vessels.* Assorted other vessels augmented berthing needs. Perhaps the largest was the *McDermott DB-100*, a slow moving semisubmersible derrick barge that arrived in the response area in mid-June following a journey from Los Angeles. Though the *DB-100* required considerable time to make the trip from its home port (underway speed: five knots), it provided berthing for nearly 550 personnel. The *DB-100* is normally used as berthing for large-scale offshore construction projects, and thus had the advantage of not requiring additional modifications. It was present from June through September.<sup>68</sup> Fish processing and passenger excursion vessels provided the balance of berthing needs.

A wash barge was located near every large berthing barge. Wash barges provided space where oily clothing and protective gear could be removed and where workers could take showers prior to boarding berthing vessels. Laundry facilities were based on the

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63. Vice Adm. C. E. Robbins, letter to Joint Task Force (Elmendorf AFB), 7 July 1989, no. C829, FOSC Exxon Valdez Archive. The USS *Mt. Vernon* left the response area on 18 July.

64. JTF Situation Report 087 (final report), DOMS-JTF, Elmendorf AFB, 19 Sept. 1989. Seven U.S. Navy LCMs were left behind, with Exxon assuming responsibility for transport of those vessels to San Diego later in the month.

65. Exxon reported that it consulted local fishermen for the best locations for mooring camp barges. Mooring systems were designed to deal with fifty knot winds, and a tug was assigned to standby at each camp barge for possible emergencies, including breakaways.

66. Carpenter, Dragnich, and Smith, 205–207.

67. Exxon, "Valdez Oil Spill Technology 1989 Operations," 83.

68. J. Zimmerman (McDermott), conversation record by BM1 R. Travis, 25 Jan. 1992, no. F733, FOSC Exxon Valdez Archive. The vessel also was equipped with two large cranes.

wash barges as well, and these vessels generated substantial amounts of waste water, requiring regular fresh water deliveries and waste water transferals.<sup>69</sup>

## COAST GUARD AND OTHER VESSELS IN THE 1989 RESPONSE

Coast Guard vessels and equipment were especially prominent in the early days of the spill. Coast Guard vessels quickly established a safety zone about the stricken *Exxon Valdez*. At least eleven Coast Guard vessels were present during April 1989, many of them helping to oversee booming and skimming operations. The 378-foot USCGC *Rush* helped establish order in the skies above Prince William Sound when it arrived on 25 March to become an air traffic control platform.<sup>70</sup>

Coast Guard vessel activity went through a rapid buildup phase in early April, remained heavy for a two week mid-April period, and was then reduced toward the end of the month. There were four or five Coast Guard vessels on hand during most of the first part of May, and two or three during the latter stages of the month. June began with three Coast Guard vessels assigned, but by mid-month the number was reduced to one, a level which was maintained through most of the remainder of the 1989 response.<sup>71</sup>

## INDUSTRY COOPERATIVES

Many of the world's oil spill response assets are held by cooperatives. Cooperatives consist of groups of enterprises (usually private companies) that agree to share resources to increase response capabilities for large spills. Cook Inlet Response Organization, a nearby cooperative, dispatched equipment that began arriving within forty-eight hours of the spill. Exxon is also a full member of Oil Spill Response, Ltd., of Southampton, England. Oil Spill Response, Ltd., is the world's largest spill response co-op, and Exxon's affiliation entitled it to call on half the organization's resources. Exxon obtained twenty-four assorted skimmers, pumps, and other specialized gear from Oil Spill Response, Limited. These items began arriving on Sunday, 26 March.<sup>72</sup>

## VESSEL CLEANING

Vessels working in waters where floating oil was present frequently became oil contaminated. As a result, the first of several boat cleaning stations was established at Valdez in early April. A portion of the harbor was boomed off to contain oily wash water.<sup>73</sup> Within a few days another station was established at Cordova, with the

69. Carpenter, Dragnich, and Smith, 210. The authors specify that pretreatment of wash vessel wastes was needed before delivery to the Valdez Municipal treatment plant. Those wastes tended to have higher-than-acceptable levels of oil and grease.

70. USCG Pollution Report (PWS Polrep 5), sec. (2)(C). The *Rush* also performed other duties, including distribution of response supplies, while serving as air traffic control center.

71. Based upon JTF situation reports, federally controlled/owned vessel operations reports, Joint U.S./Soviet vessel operations reports and T/V *Exxon Valdez* fact sheets, from various dates throughout 1989 spring and summer months.

72. Exxon, "Valdez Oil Spill Technology 1989 Operations," table 1, 18. Exxon ordered several pieces of equipment on 24 March. In addition to those already mentioned, other providers included Alaska Clean Seas of Anchorage, and Clean Bay of San Francisco.

73. USCG Pollution Report O 010737Z April 1989 (PWS Polrep 17), sec. (3)(A).

assistance of the Cordova District Fishermen United (CDFU).<sup>74</sup> Still another vessel cleaning operation was set up at Kodiak, commencing activity on 10 April.<sup>75</sup>

Ultimately, approximately fourteen vessel cleaning stations were established within Prince William Sound and the Gulf of Alaska in 1989. Cleaning consisted largely of removal of tar and oil scum from vessel waterlines. In the case of fishing vessels, hulls and fish holds needed to be thoroughly cleaned and Alaska Department of Environmental Conservation–approved prior to rejoining the fishing fleet.<sup>76</sup> In September 1989, the final vessel cleanings were completed, and the remaining cleaning stations were closed. No formal vessel cleaning operations were deemed necessary thereafter.<sup>77</sup>

#### 1989 DEMOBILIZATION

Demobilization planning began early. Based upon its review of historical weather patterns, Exxon assumed that operations would need to be curtailed sometime in September. The plan also had to consider the time needed for the departing vessels to return safely to home port. Within five weeks of the high of 1,464 vessels on 6 August, only five hundred vessels were left. By the end of September, less than one hundred vessels remained and demobilization was complete in mid-October.<sup>78</sup>

Exxon developed a database to assist with demobilization. Information on each vessel included size, equipment on board, assignments performed, crew size, home port, and other data. The database proved useful for scheduling, inventorying the fleet, and for making sailing plans for vessels departing the spill area. Exxon sent departing vessels in groups, tracking their return voyages. Inspections were made to ensure the seaworthiness of departing vessels, which were not considered to be off-hire until they reached home port.<sup>79</sup> Prior to departing the response area, each vessel went through a demobilization process. Vessels were cleaned at one of the fourteen cleaning stations in Prince William Sound and the Gulf of Alaska, and Exxon equipment was removed.

The demobilization phase was not without serious incident. On 22 September, the ninety-foot tug *Steadfast* departed from its spill assignment with a barge tow. A distress call (received at Communication Station Kodiak, from the Kayak Island area) reported that the vessel was taking water, and was being abandoned by its three-person crew. The USCGC *Sweetbrier* conducted a search, with negative results.<sup>80</sup> Subsequent overflights took place, and eventually two bodies were found. The empty barge which

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74. P. Wuerpel (ADES), letter to B. LaResche (Alaska OSC), 13 May 1989, no. C217, FOSC Exxon Valdez Archive. Facilities at Cordova grew to a rather large capacity. Four stations were established by mid-May, thus providing a cleaning capacity of fifteen boats per day. At that time it seemed that facilities were adequate for needs, based upon a lack of backloaded vessels.

75. Exxon, daily report, 8 Apr. 1989, FOSC Exxon Valdez Daily Archive.

76. Exxon, "Valdez Oil Spill Technology 1989 Operations," 100.

77. O. Harrison (Exxon), conversation record by Lt. Comdr. R. Gaunt, 29 Dec. 1992, no. F726, FOSC Exxon Valdez Archive.

78. Carpenter, Dragnich, and Smith, fig. 3, 206. Though vessel numbers began declining at an earlier date, Exxon considered the first day of demobilization to have been 22 August.

79. Exxon, "Valdez Oil Spill Technology 1989 Operations," 100.

80. USCG Pollution Report R 260342Z September 1989 (PWS Polrep 205), sec. (2)(G).

was being towed by the *Steadfast* was found, and the *Steadfast* was discovered nearby, sunken in fifty feet of water.<sup>81</sup>

## POST-1989 CLEANUP SEASON VESSEL OPERATIONS

Exxon contracted with vessels to serve the response/monitoring program that was organized for the winter of 1989–1990. Because winter safety was a concern, Exxon required: (1) all vessels be at least 150 feet in length (to provide seaworthiness in the event of storms); (2) survival training, clothing, and equipment for all operations personnel; and (3) radio contacts at regular intervals, whether underway, at anchor, or berthed in city harbors.<sup>82</sup> Another policy mandated that personnel leaving Exxon vessels for surveys or other shore-side tasks do so only during daylight hours.<sup>83</sup>

Exxon also required a “hold harmless” agreement for all non-Exxon personnel who were passengers on Exxon conveyances. This raised questions about whether or not individual Coast Guard personnel, acting in performance of duties, could (or should) properly sign such a document waiving their rights.<sup>84</sup> Exxon’s waiver caused similar problems for National Park Service, ADEC and Alaska Department of Fish and Game personnel. Ultimately, the matter was resolved when blanket waiver agreements were reached between Exxon and other agencies involved in the response.

Exxon agreed to provide the Coast Guard a berth for a monitor on each of its winter response vessels. The incident command post (ICP) supervisors assigned monitors to the vessels in consultation with the FOSC’s chief of operations. The monitors, although not on every vessel, took part in shoreline surveys, searches for reported oil slicks, and other significant events.

## 1990 CLEANUP SEASON

Exxon proposed, and the FOSC approved, a substantially different cleanup approach for the 1990 cleanup season. Emphasis in 1990 shifted away from “intrusive” cleanup approaches. There was a greater reliance on manual collection of oily debris and a more extensive bioremediation program. Exxon projected that a work force about 10 percent the size of the previous year’s response work force would be adequate for 1990 cleanup operations. Once again, the deployment plan would dictate vessel needs.

The approved 1990 response plan required approximately forty-eight vessels: eight berthing vessels (one for each squad), twelve landing craft, twenty work boats, and eight supply vessels. In addition, about thirty miscellaneous small craft, were to be employed

81. North Pacific Search And Rescue Coordinator’s Situation Report no. 1, “Tug *Steadfast* Sunk Kayak Island, GOA,” 26 Sept. 1989.

82. Exxon, “Exxon Transportation Winter Operations Manual 1989–1990,” sections C and G, no. W490, FOSC Exxon Valdez Archive, C 1–3, and G 1. The survival training program consisted of instruction in finding shelter, food sources, firecraft, cold weather medicine, personal protection, and rescue.

83. E. J. Smith (Exxon), letter to Capt. R. Asaro, 5 Feb. 1990, no. W448, FOSC Exxon Valdez Archive.

84. Comdr. M. L. Dorsey, letter to Rear Adm. D. E. Ciancaglini, 31 Jan. 1990, no. W318, FOSC Exxon Valdez. Captain Dorsey addressed several matters, including the wisdom of permitting personnel to waive important legal rights, and the rights of his/her potential survivors. It also considered whether personnel could be ordered to sign such a document (Captain Dorsey felt that such an order was improper). Discussion of the legal ramifications of the matter filled nearly three pages of letter text.

for support. Vessels were allocated to support eight sixty-person squads.<sup>85</sup> Additional vessels were projected for support of non-cleanup activities, including shoreline surveys and scientific studies.<sup>86</sup>

Neither U.S. Navy nor other federally owned vessels were chartered by Exxon. "All of our equipment was private, and either leased or owned by Exxon," according to one Exxon logistics manager. Exxon also abided by the previous year's Coast Guard mandate that there would be no waivers for response vessels as seen during the early 1989 buildup. "We would have dealt with the area MSOs if such a need had arisen," reported the Exxon spokesman, "but there was never a need, since we were able to engage all of the fully documented vessels that we needed."<sup>87</sup>

Logistics were greatly simplified in 1990. Gone was the need to provide huge volumes of food and other day-to-day living needs for large numbers of persons. Most of the response's supply needs were handled through vessel connections with Seward. (Seward is not only closer [than is Valdez] to Anchorage, the area's main center of commercial and supply activity, but it is also accessible via the Alaskan Railroad.) Dedicated fresh water and sewage transport vessels continued to function, but again were not pressed with huge volume requirements. Gone too were the massive berthing vessels with hundreds of temporary residents. The *Corinthian*, a passenger excursion vessel with berthing facilities for approximately seventy persons, was one of the larger members of the 1990 fleet.<sup>88</sup>

Exxon eventually added a ninth and a tenth cleanup squad. Squad nine (aboard the M/V *Sea Trader*) mobilized about 1 June, and squad ten (M/V *Pacific Sea Horse*) on 10 July. Aside from the *Columbia* and the *Corinthian*, all berthing vessels accommodated twenty to twenty-five persons. In most squads, some members were berthed in vessels other than the main ship. In addition to vessels directly involved in cleanup activities, at least eight were active in environmental and/or scientific studies. Work continued into the late summer, with about three quarters of site operations taking place in Prince William Sound. At the peak of operations there were sixty-eight vessels active in the response.<sup>89</sup>

Though the vessel safety record was generally good during the 1990 response, a few minor incidents occurred. The M/V *Oosik*, a small landing craft assigned to squad one, sank in six feet of water on 9 May when it was overloaded, and apparently operated with the bow door open. It was refloated with no damage or injuries of significance.<sup>90</sup> The next day another Prince William Sound landing craft (The *Helenka B*) experienced

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85. Exxon, "1990 General Plan," 15 Mar. 1990, sec. 12, no. W477, FOSC Exxon Valdez Archive, 3. The numbers in each squad varied according to the tasks assigned to that squad and the 60 person average included other support personnel (i.e., skiff operators, vessel crew, etc.).

86. Exxon, "1990 Work Program," 27 Apr. 1990, sec. 6, no. W763, FOSC Exxon Valdez Archive, 1. Of the eight squads, six were planned as cleanup teams, and two others were to provide bioremediation applications.

87. M. Friesenheim (Exxon), conversation record by Lt. Comdr. R. Gaunt, 1 Feb. 1993, no. F739, FOSC Exxon Valdez Archive.

88. Ibid., The *Columbia* (squad 2) was larger, actually housing over one hundred persons.

89. Exxon, "1991 General Operations Plan," Anchorage, 21 May 1991, no. F206, FOSC Exxon Valdez Archive. (Though a USCG end-of-season report indicated a sixty-three vessel total [USCG Pollution Report, 17 Sept 1989, (PWS Polrep 299)].)

90. Commander in chief (CINC) sound fleet, daily report to FOSC, 9 May 1990, FOSC Exxon Valdez Daily Archive.

flooding of its engine room. It was discovered that the vessel's hull had a defective patch, the apparent result of a previous accident and improper repair. The vessel was ordered (by the Coast Guard) not to operate until suitable repairs were effected.<sup>91</sup> The *Helenka B* was repaired, inspected, and placed back in service on 11 May.<sup>92</sup> On 6 June, the M/V *Greystone* hit a submerged rock, sustaining a hole in its hull. It was repaired, and returned to service without other consequence.

As in 1989, mid-September was targeted as the demobilization date. By 13 September, forty-eight vessels were still active in the response. Nearly all of them were demobilized between 13 September and 15 September. About half of the demobilization took place at Seward, and the remainder at Valdez.<sup>93</sup> The season had seen work on 587 segments, including substantial amounts of manual pickup, 740 bioremediation applications at 373 sites, and a sizable storm berm relocation project.<sup>94</sup>

#### JOINT TRANSPORTATION OPERATIONS CENTER (JTOC)

The Joint Transportation Operations Center (JTOC) was established to deal with air and vessel transportation needs for 1990. (JTOC also functioned in 1991 in a similar, but scaled-down capacity.) JTOC representatives helped to pre-plan transportation needs for cleanup operations. (Exxon, however, did the actual contracting for vessel use.)<sup>95</sup>

The JTOC, located at the Anchorage International Airport, served as scheduling center for vessels and aircraft. Agencies would contact JTOC to be scheduled aboard aircraft or vessels. The state, Exxon, and the federal government had JTOC representatives who would attend to their particular needs. (The Coast Guard representative also served as federal agent in JTOC.) It was fairly common for agencies to "trade," or share accommodations.<sup>96</sup>

Another function of JTOC was to track the positions and status of response aircraft and vessels. Vessels were required to report their positions at two-hour intervals. When vessel contacts were not made as scheduled, the Coast Guard Rescue Coordination Center (RCC) was alerted. The Joint Transportation Operations Center made such reports to RCCs about once a week in 1990, and less often in 1991.<sup>97</sup>

#### 1991 CLEANUP SEASON

The 1991 cleanup season started with May Shoreline Assessment Program (MAYSAP), which actually began in April. Five vessel-based teams and one helicopter-based team were assigned to survey the condition of approximately 577 shoreline subdivisions over a period of six weeks. The helicopter team was responsible for most of the 126

91. CINC sound fleet, daily report to FOSC, 10 May 1990, FOSC Exxon Valdez Daily Archive.

92. CINC sound fleet, daily report to FOSC, 11 May 1990, FOSC Exxon Valdez Daily Archive.

93. Exxon Joint Transportation Operations Command, daily vessel schedule report, 10 Sept. 1989, FOSC Exxon Valdez Daily Archive.

94. USCG Pollution Report R 172359Z September 1990 (PWS Polrep 299), sections (2)(C), (2)(D), and (2)(E).

95. E. Koch, conversation record by Lt. Comdr. R. Gaunt, 4 Feb. 1993, no. F740, FOSC Exxon Valdez Archive.

96. Ibid.

97. Ibid.

sites outside Prince William Sound.<sup>98</sup> Operations began on 26 April, with some difficulty due to adverse weather.<sup>99</sup> May Shoreline Assessment Program teams consisted of eleven members, and were accommodated, for both work and berthing needs, by offshore supply vessels (the M/V *Adele Candies*, for example). Most MAYSAP vessels had seen service during 1990 operations.<sup>100</sup>

With MAYSAP complete, Exxon proposed its 1991 work-deployment plan. Small, mobile teams were organized, and based from 150 foot command/berthing vessels. Each team was equipped with a landing vessel, two smaller boats, and inflatable skiffs. One landing craft vessel (LCV) was outfitted for bioremediation. The 180-foot M/V *Adele Candies* provided logistical support, transporting goods and equipment from Exxon's Seward support facility. The vessel transported sewage and other wastes, and delivered fresh water to the berthing/command vessels.<sup>101</sup>

There were two vessel casualties in 1991. On 27 April, the M/V *Sovereign* had a fire in the bilge area of its engine room. It was quickly brought under control, though one crewman reportedly suffered burns.<sup>102</sup> On 15 June, the M/V *Don Bollinger* grounded four miles off Eleanor Island. The crew prepared to abandon ship, but the vessel was apparently not in imminent danger of sinking. Within a short period the vessel floated free (on a high tide) and anchored in the immediate area to await a damage inspection. Diver inspection revealed substantial damage to the keel. It was moved to anchorage at the Bay of Isles, and required fairly extensive repairs before returning to service.<sup>103</sup>

#### 1992 CLEANUP SEASON

Winter activities were very limited, and consisted of planning for the final phase of cleanup operations. At a meeting held at 17th Coast Guard District in January of 1992, agency and Exxon representatives set plans for conducting shoreline assessment and cleanup during the coming spring and summer months.<sup>104</sup>

Two comparatively small teams (ten or eleven members each) conducted both the survey work and much of the remaining cleanup work. The makeup of teams consisted of representatives of the Coast Guard, ADEC, NOAA, Exxon, several scientists/technicians, land managers (when applicable), and two combination skiff drivers/cleanup laborers. Some eighty pre-identified sites would be visited.<sup>105</sup>

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98. Exxon, "May Shoreline Assessment Program," 22 Apr. 1991, sec. 2.2 (Survey Scope/Schedule/Team Responsibilities), no. F389, FOOSC Exxon Valdez Archive.

99. USCG Pollution Report P 270055Z April 1991 (PWS Polrep 300), sec. (2)(F).

100. Exxon, "May Shoreline Assessment Program."

101. Exxon, "1991 General Operations Plan," Anchorage, 21 May 1991, sec. 5.

102. Lt. I. Nance, "M/V *Sovereign* Fire" (incident report submitted to FOOSC, 27 Apr. 1991), no. F601, FOOSC Exxon Valdez Archive.

103. USCG, "Grounding of M/V *Don Bollinger* in PWS on 15 June 1991" (monitor's incident report, 15 June 1991), no. F579, FOOSC Exxon Valdez Archive.

104. Lt. Comdr. R. Gaunt, "1992 Juneau Spring-Summer Planning Meeting" (historian's report, 22 Jan. 1992), no. F316, FOOSC Exxon Valdez Archive.

105. Exxon, "FINSAP 1992 Shoreline Assessment Program," March 1992, sec. 2, no. F285, FOOSC Exxon Valdez Archive.

Two OSVs set sail on 14 May to begin the first phase of 1992 operations. The first eight-day portion of the operation consisted of work in Prince William Sound, scheduled about wildlife constraints. Aside from skiffs to convey assessment/cleanup teams ashore, and small boats from Chenega Village (a small team from the village again participated in the cleanup), the two OSVs were the sum and total of cleanup operations. They were self-contained, and with rather short duration missions, did not require substantial support while in the field.<sup>106</sup>

From 23 May through 28 May vessel operations were suspended due to tide conditions which made shorelines inaccessible. Operations resumed on 28 May, with additional surveys in Prince William Sound and on the outer Kenai Peninsula. All sites were surveyed during the next three days. Following completion of the surveys, all that remained were small cleanup operations, with three follow-up visits to sites where work orders had been processed.<sup>107</sup> At 1745, on Friday 5 June 1992, the final work was completed.<sup>108</sup> The two OSVs returned their respective cleanup/survey teams to port, and the cleanup, along with its vessel operations, was over.

## REGULATORY CONFLICTS THAT AFFECTED VESSEL OPERATIONS

Commercial vessels are subject to a complex array of laws and regulations designed to accomplish a diversity of goals. Some laws endeavor to protect the seaman, others the passenger. Some deal with the safety of the vessel, environmental pollution or with restricting competition. Even "uninspected" fishing vessels are subject to regulation. Table 16.3 illustrates the variety of requirements placed on fishing and fishery-related vessels. Against this backdrop, Exxon encountered regulatory problems when it sought to use vessels for services for which they were not intended. This section details some of these conflicts and how they were resolved.

Another issue that surfaced early was the question of foreign vessel participation, and Jones Act provisions (46 U.S.C.A., app. 298, 316, and 893; 19 CFR 480 et seq.). The Jones Act prohibits foreign vessels from engaging in the U.S. coastwise trade.<sup>109</sup> The first Jones Act waiver was granted to Exxon on 14 April. It covered two French vessels, and two from Canada. The initial waiver was for a ten-day period. When Exxon sought extensions of these initial waivers, they enlisted the FOSC's support, declaring, "The continued use of [the four vessels]...are critical to our cleanup operation."<sup>110</sup> Vice Admiral Robbins secured the support and assistance of Coast Guard Commandant Yost, and though extensions were granted, they were limited to another short, ten-day period.<sup>111</sup>

106. USCG, "1992 Work Program Completion Report," 1 Aug. 1992, no. F692, FOSC Exxon Valdez Archive, 2.

107. *Ibid.*

108. Lt. Comdr. J. Madden, interview by Lt. Comdr. R. Gaunt, 10 June 1992, no. F664, tape, FOSC Exxon Valdez Archive.

109. The role of the U.S. Customs Service in granting Jones Act waivers is discussed in chapter 19, "Federal Intergovernmental Relations." Unfortunately, the U.S. Customs Service chose not to be flexible in granting waivers to the Jones Act for spill response vessels.

110. O. Harrison (Exxon), letter to Vice Adm. C. E. Robbins, 24 Apr. 1989, no. C495, FOSC Exxon Valdez Archive.

111. Vice Adm. C. E. Robbins actions were recorded on his personal notation inscribed on FOSC Archive document no. C495. (The authority for granting waivers was U.S. Customs.)



Navigation laws (including the coastwise trade law) can only be waived under the authority provided by the act of 27 December 1950 (64 Stat. 1120; 46 U.S.C. app. proc. sec. 1). Waiver authority is thus provided to cognizant agency heads in matters deemed "in the interest of national defense." The U.S. Customs Service considered four federal agencies to be "interested parties" in the matter of waivers for vessels involved in the cleanup. Those included the Department of Defense, the Department of Energy, the National Maritime Administration, and the Coast Guard.<sup>112</sup>

TABLE 16.3

Applicability of the Statutes and Regulations Pertaining to Fishing and Fishery-Related Vessels

	Fishing vessels		Fish tender vessels		Fish processing vessels	
	< 200 GT*	≥ 200 GT	≤ 500 GT	> 500 GT	≤ 5000 GT	> 5000 GT
Manning (46 CFR 175,186)	No	Yes	Yes	Yes	Yes	Yes
Coastwise Load Line (46 CFR 42)	No	No	Yes	Yes	Yes	Yes
International Load Line (46 CFR 42)	No	No	Yes	Yes	Yes	Yes
Inspection for Certification (46 CFR 90-98)	No 46 CFR 24-26	No 46 CFR 24-26	No 46 CFR 24-26	Yes	No 46 CFR 24-26	Yes
Dispensing Petroleum Products (46 CFR 90-98, 30-40)	No	See note 7	No	Yes 46 CFR 105	Yes 46 CFR 105	Yes
Navigation Safety Regs (33 CFR 164)	No	Yes, if ≥ 1600 GT	No	Yes, if ≥ 1600 GT	Yes, if ≥ 1600 GT	Yes
SOLAS '74 (vessel on an international voyage)	No	No	No	Yes	Yes, if ≥ 500 GT	Yes
Vessel Documentation (46 U.S.C. 12101 et seq.)	All		All		Optional	
Bridge-to-Bridge Radiotelephone (39 CFR 26)	All seagoing vessels > 300 GT while navigating					
Pollution Prevention (33 CFR 155-156)	All (see regulations for specific requirements based on vessel size and oil capacity).					
MSD's (33 CFR 159)	All					

Source: USCG, "Marine Safety Manual," Commandant Instruction no. M16000, vol. 2.

\* GT= gross tons

The posture taken by the Department of Defense was generally that it could not support waivers on the basis of defense interests, but that it supported Coast Guard wishes and recommendations in the matter. The National Maritime Administration, noting the unavailability of U.S. flag skimmers for cleanup duties, regularly supported necessary extensions for foreign flag skimmer vessels. The Department of Energy's position was

112. S. R. Martouche (U.S. Dept. of the Treasury), letter to R. W. MacKechnie, Jr. (Donohue and Donohue, counselors at law), 2 June 1989, no. C420, FOSC Exxon Valdez Archive.

based upon the premise that "supplies of crude oil and petroleum products are vital to the national defense," and that the availability of those commodities "would be jeopardized in both the near-term and longer-term by a failure to act promptly and effectively to clean up the Alaska oil spill."<sup>113</sup>

Making judgments and recommendations for continued use of foreign flag skimmer vessels was an important task for the FOSC. It was a question that arose repeatedly, and which required new consideration on each occasion, based upon the circumstances and conditions prevailing at various phases of the cleanup. As things developed, the FOSC supported several waiver extensions, nearly all of them for specialized skimming equipment.

The flood of vessel activity greatly increased the work load on Marine Safety Office (MSO) Valdez. It was impossible, for example, to properly investigate innumerable small spills involving fuel transfers, sewage discharges, or some other pollutant. Normal standards were very difficult to maintain due to the number of vessels, accidents, disposal problems, monitoring needs, and other problems. While MSO Valdez was augmented by additional help from the FOSC staff, the familiar problem of frequent rotations sometimes meant that personnel who were just reaching desirable experience levels were also reaching expiration of orders. Marine safety office inspectors and investigators tried to make the best of a difficult 1989 challenge, but were often uneasy about vessel conditions in Prince William Sound.<sup>114</sup> Many of the same problems were experienced by MSO Anchorage.

## SUMMARY

If a map of the spill affected area were to be superimposed on the east coast of the United States with Valdez superimposed on Hyannis, Massachusetts (Cape Cod), the furthestmost extent of the spill would have been the Virginia capes. In this area from Cape Cod to Virginia envision five cities (populations from 333 to 6,774) and fifteen villages (total population 2,036) with highways connecting three of the cities and only two cities with rail links. With an understanding of the geography of Alaska it is easier to understand why vessel operations were such a significant part of the response.

From the earliest stages of the response, readily available fishing vessels were employed in the tasks they were capable of performing. Specialized vessels that could make a meaningful dent in recovering the floating oil were seriously lacking. As Exxon's work force grew, there was a shortage of large vessels capable of berthing significant numbers of people. There was also a lack of vessels that could operate for an extended period of time and provide command and communication facilities. Coast Guard and U.S. Navy vessels were critical in providing these services during the early stages of the response. As Exxon was able to acquire alternative commercial vessels, the government vessels were released.

113. S. R. Martouche (U.S. Treasury Dept.), letters to law firm of Donohue and Donohue, 3 May 1989, no. C38; 17 May 1989, no. C145; and 2 June 1989, no. C420, FOSC Exxon Valdez Archive.

114. CWO M. Delozier, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, Valdez, 17 July 1991, no. F174, tape, FOSC Exxon Valdez Archive.

Exxon's ability to rapidly acquire, design, outfit, and deploy special purpose vessels was remarkable. As problems such as cleaning hard-to-reach shorelines arose, solutions like the omni-barge were developed. This capability played a significant role in the overall success of the cleanup effort.

In any future oil spill of the magnitude of the *Exxon Valdez* oil spill, it is difficult to predict the role vessels will play. The variabilities of geography, the nature of the spill and the skills, capabilities, and determination of the responders will likely be important determinants.

## CHAPTER 17. WORKER HEALTH AND SAFETY

### OVERVIEW

The grounding of the *Exxon Valdez* resulted in multiple health and safety concerns, both immediate and over an extended period. Escaping oil, as it entered the environment, created hazards, initially quite extreme, for members of the crew and those who were involved in the precarious task of vessel lightering. The threat of explosion and the chance that the vessel might break up or capsize were prominent concerns. Later, as the shoreline cleanup was being organized, numerous health and safety considerations had to be factored into the deployment of a large workforce in the field.

Worker safety and health was primarily the responsibility of Exxon as the responsible party.<sup>1</sup> However, the Federal On Scene Coordinator (FOSC), in ensuring the response met federal guidelines, was also concerned with health and safety issues that had a bearing on the cleanup. Those areas of concern to the FOSC included providing a conduit between the responsible party and those federal and state agencies with health and safety concerns, and, where possible, facilitating permitting and other interactions between Exxon and the agencies so that the progress of the cleanup would not be hindered. Generally, however, the involvement of the FOSC with the health and safety concerns of the *Exxon Valdez* spill was indirect.<sup>2</sup> This chapter discusses the health and safety problems faced by spill responders, and how those challenges were met.

### FOSC INVOLVEMENT IN HEALTH AND SAFETY MATTERS

In several areas within the National Contingency Plan, the FOSC is directed to exercise responsibilities related to health and safety. The well-being of workers, for example, is addressed in subpart C (Worker Health and Safety), 40 CFR 300.38. The Occupational Safety and Health Act (OSHA) and state occupational safety and health laws are both applicable to worker safety. The FOSC is required to be alert for “public health threats” and “worker health and safety problems.”<sup>3</sup> The safety and well being of those directly and indirectly involved with the spill was considered a very high priority. As Admiral Paul Yost, commandant of the Coast Guard, later directed the FOSC: “In conducting operations you must give strong consideration to personnel health and safety, making sure that this is communicated to all interests.”<sup>4</sup>

The Coast Guard did not have direct involvement in many of the health and safety initiatives that were pursued during the response, however. A substantial number of

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1. 40 CFR 300.38 (b).

2. One human health issue where the FOSC did play a primary role in assuring that adequate attention was accorded concerns the “subsistence study” described in more detail in chapter 18, “Community Concerns.”

3. 40 CFR 300.33 (b)(7).

4. Adm. P. Yost, letter to FOSC, 15 Feb. 1990, no. W441, FOSC Exxon Valdez Archive.

federal and state agencies came to the response to monitor and assist in health and safety related matters, and these groups worked cooperatively with the FOSC. Among these groups were the Environmental Protection Agency (EPA), the Public Health Service (PHS), state and federal Occupational Safety and Health Administrations (OSHA), the National Oceanic and Atmospheric Administration (NOAA), the Food and Drug Administration (FDA), the National Institute of Occupational Safety and Health (NIOSH), Alaska Department of Fish and Game (ADF&G), Alaska Department of Health and Social Services (ADHSS), Alaska Department of Environmental Conservation, Alaska Division of Environmental Health (ADEH), Alaska Department of Public Health (ADPH), and the Alaska Department of Labor (ADOL), along with a collection of privately contracted scientific resource agencies, Native associations, and others. Dealing with health and safety issues proved to be a broad-based and often organizationally complex matter.

### SALVAGE AND LIGHTERING

The lightering and salvage of the stranded vessel presented a number of safety and health issues. The members of the *Exxon Valdez* crew and those who came to perform or monitor salvage and lightering operations faced a number of potentially serious environmental health hazards. These included the threat posed by escaping hydrocarbon fumes; particularly exposure to benzene, toluene, and xylene vapors. Industrial hygienists, brought aboard to assist in salvage operations, played a significant role in ensuring the safety of salvage operations according to one observer.<sup>5</sup> There were additional concerns that, because the vessel was neither structurally sound nor stable, it might have overturned, or even broken up, with great potential for loss of life, and substantially larger spillage than actually occurred. Explosion was also a very real possibility in the earliest hours of the spill.<sup>6</sup>

### HAZARDS IN THE SHORELINE WORK ENVIRONMENT

Concerns about worker health and safety, particularly during shoreline cleaning operations, drew a great deal of attention in 1989. Possible harmful effects of respiratory system and dermal contact with oil were of specific concern. In addition, heavy coatings of oil on shorelines created extremely hazardous footing, potentially resulting in sprains or broken bones. Exxon and its contractors sought to resolve those problems through worker training, supervision, provision of appropriate equipment, and the promotion of safety-mindedness among employees.

As the shoreline cleanup was gearing up, a Public Health Service official wrote to the FOSC that the health risks likely faced by shoreline workers included muscle strains, broken bones and concussions from slips and falls on uneven and slippery rock surfaces, eye injuries, dermatitis from prolonged contact with oil residues, back injuries from incorrect lifting of heavy objects, hypothermia, possible heart attacks, and other

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5. R. Wade, Ph.D., "The Exxon Valdez Oil Spill, The Environmental Health Response to Man-Made Disasters," *Journal of Environmental Health* 54, no. 4 (Jan.-Feb. 1990): 213.

6. For a more detailed discussion of the hazards present during the early stages of the response, the reader is referred to chapter 2, "Vessel Stabilization, Lightering, and Salvage."

problems associated with personnel in poor cardiovascular health. Burns, shock, and illness borne by food or water were also seen as likely to occur. It was judged important that an adequate medical support force be available to support teams of shoreline workers and to care for the injuries that seemed inevitable.<sup>7</sup>

The injuries actually reported by response workers in 1989 through worker compensation claims do not show any appreciable divergence from these expectations (table 17.1).

TABLE 17.1

## Injuries Reported During 1989 Response

Type of Injury Reported	Number of Injuries	% of Total Injuries
Sprains and strains	750	43.9
Fractures	262	15.3
Lacerations	128	7.5
Contusions and crushing injuries	75	4.4
Scratches and abrasions	38	2.2
All other injuries*	456	26.7
<b>Totals</b>	<b>1,709</b>	<b>100.0</b>

Source: Regional Response Team Report, "Safety Issues," sec. 6 (C)(10)(f).

\*Category includes several injury types, all less than 1% of the total injuries.

Exxon saw its safety performance record for 1989 as "impressive" in terms of injury index figures. During that year it was reported that there were 24.7 injuries per million hours of work performed. By contrast, the heavy construction industry (featuring a somewhat comparable work environment) showed a level of 37.9 injuries per million hours worked during the previous calendar year. The general pattern of injury incidents witnessed the highest rates of problems during March and April (1989), with lower levels thereafter.<sup>8</sup>

A federal agency report of worker injuries during the first month of the response revealed a wide variety of mishaps. As of 29 April, Exxon reported a total of sixty-six relatively minor and non-serious injuries and illnesses among cleanup workers. Of those, eleven involved bites and scratches suffered by workers at the Valdez Otter Rescue Center. Only one of the injuries (a sprained ankle) was reported to have come from shoreline operations.<sup>9</sup> It should be pointed out that the safety programs which later produced an improved safety climate were not yet fully operational during the days when the above-cited injuries were being sustained.

7. Capt. J. M. Johnson (PHS), letter to FOSC, 24 Apr. 1989, no. C383, FOSC Exxon Valdez Archive.

8. Exxon, "1990 General Plan, March Planning Document," 15 Mar. 1990, no. W477, FOSC Exxon Valdez Archive.

9. Dr. M. Singal, Dr. R. A. Rinsky, and Dr. G. F. Stein (U.S. Health and Human Services), letter to Dr. J. P. Middaugh (DPH), 24 May 1989, no. C550, FOSC Exxon Valdez Archive. At the time of the report, about four thousand employees were active in the response.

## CARCINOGENIC RISK

A team of public health experts who visited the response area on 12–14 April presented a much different picture of workers' health risks. The team had been invited to observe the cleanup at the request of Jim Sampson, Alaska commissioner of labor, and was sent by the Laborer's National Health and Safety Fund of Washington, D.C. A prominent member of the five-person team was Dr. Eula Bingham, a University of Cincinnati vice president/graduate dean, and recognized expert on chemical carcinogenesis.<sup>10</sup>

The visiting team was critical of the operations they observed during the three-day visit. It registered concerns about possible inhalation, ingestion, and skin contact with crude oil. Calling the crude "toxic and hazardous," the group raised the possibility of worker risks for a variety of skin and other disorders, including cancer. A number of recommendations were made, including assured use of protective devices and clothing, and a substantially increased training program.<sup>11</sup>

The U.S. Public Health Service also visited the response area during the first month of the spill, and Captain J. M. Johnson (PHS) issued his findings on the same day as the Laborer's National Health and Safety Fund study was published. In Johnson's opinion, both training and the equipment being issued were adequate. The PHS official concurred, however, with the Bingham group's recommendations favoring improved medical support in general, and its claims that a more comprehensive environmental health program should be provided. Johnson disagreed that the dangers from exposure to the crude oil were as great as the Bingham group had suggested. The levels of toxics, he claimed, had diminished significantly since the spill; thus, the greatest remaining danger from contact with petroleum residues was skin irritation.

## ANIMAL ATTACKS

The presence of bears began to be noted in May as hibernation ended and they began scavenging for food, sometimes in areas where cleanup workers were deployed. Workers were cautioned, and measures were taken to avoid attracting the animals to work areas. In some locations, armed guards were part of the shoreline complement, and on 21 May a VECO worker shot and killed a bear at a Kodiak Island work site.<sup>12</sup> In another incident, two VECO workers used a flare gun to frighten away an encroaching bear at Shugak Island.<sup>13</sup> There were no reported incidents of bear-related injuries to workers. The presence of bears appears to have been a major consideration in the decision not to establish land camps.

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10. Laborer's National Health and Safety Fund, "Report of the Public Health Team Assessing the Exxon Valdez Oil Spill Cleanup," Washington, D.C., 24 Apr. 1989, no. C281, FOSC Exxon Valdez Archive. (Composition of committee noted in preface.) Dr. Bingham, prior to her University of Cincinnati assignments, served from 1977 through 1981 (Carter administration) as assistant secretary for occupational safety and health, U.S. Department of Labor.

11. Laborer's National Health and Safety Fund, "Report of the Public Health Team Assessing the Exxon Valdez Oil Spill Cleanup."

12. USCG Pollution Report O 211539Z May 1989 (PWS Polrep 83), sec. (2)(A).

13. T. Slabaugh (VECO), report to FOSC, 2 Aug. 1989, no. C1736, FOSC Exxon Valdez Archive.

## PROTECTIVE MEASURES FOR CLEANUP WORKERS

It was generally agreed that one of the most significant health hazards confronting shoreline workers was prolonged skin contact with crude oil. Rubber boots and gloves, and protective clothing for workers, were provided for cleanup personnel. Rain gear was issued. Clean coveralls, underwear, and socks were furnished daily. Hard hats were issued and required in work areas. Training, equipment, and policies were provided to ensure vision and hearing safety. Flotation devices were provided for workers being transported by vessel or aircraft. Workers were trained to wear protective gear at all times, and warned of the hazards associated with prolonged skin contact with crude oil. "Barrier cream" was furnished for use on exposed skin, and workers were cautioned to repair promptly ripped or damaged protective garments.<sup>14</sup>

Laundry facilities were provided for each berthing vessel in the field. End-of-shift procedures required workers to pass through a decontamination area where clothing and protective gear were removed and left for laundry workers. Contaminated tools were also stored in the "dirty" area. The employee would then move to a shower area, bathe, then be issued clean coveralls and move to living spaces. This procedure helped to reduce risks of eye and skin irritation, and promoted cleanliness in the living environment.<sup>15</sup>

Rain gear and protective clothing were laundered daily. At the beginning of a shift, workers were issued clean gear. Although there were early complaints that workers were forced to begin shifts in still-contaminated clothing, those problems seem to have been associated with startup logistics.<sup>16</sup> Remedial measures were taken as promptly as circumstances permitted.

The Laborer's National Health and Safety Fund (the Bingham group) study devoted substantial attention to the matter of protective gear for workers. Selection of glove types, worker indoctrination for the wearing of protective clothing (including its limitations), and the level of specificity in instructions for decontamination procedures were all seen by the Laborer's National Health and Safety Fund team as areas needing attention. Decontamination procedures, for example, had neither specifically *required* that those coming off shifts take showers, nor specifically *mandated* that decontamination area workers also wear protective gloves while handling contaminated tools. Workers needed also to be made aware of secondary contamination threats, such as ingestion of chemicals while eating or using tobacco products, according to the team's report.<sup>17</sup>

In 1990 and thereafter, problems with worker health and safety were much less an issue. Workers were experienced, and knew the hazards and pitfalls of work on

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14. Exxon, "Exxon Valdez Incident Health and Safety Program Manual" (prepared by VECO safety and Med-Tox Associates, 31 Mar. 1989), version 1, no. C2409, FOSC Exxon Valdez Archive, 19.

15. *Ibid.*

16. Capt. D. Zawadzki, memorandum to commanding officer (USS *Juneau*), 5 May 1989, no. C60, FOSC Exxon Valdez Archive. See attachment (interview by Susan Ogle with Lisa Jones, 3 May 1989).

17. Laborer's National Health and Safety Fund, "Report of the Public Health Team Assessing the Exxon Valdez Oil Spill Cleanup."



shorelines. In addition, the properties of the oil had changed during the winter months. This meant that workers did not tend to get as dirty while on the job. The downsizing of the response helped as well. No longer were berthing vessels the types that accommodated hundreds of workers. Instead, smaller vessels with spaces for forty to fifty persons were the general rule. "We had time to plan," according to Fred Brauer, Exxon's safety and health manager. "I don't remember a single thing that caught us really by surprise. All in all I thought '90 was a good year."<sup>18</sup>

The story was similar in 1991. Exxon was simply "restarting the system" as the new year began. According to Brauer:

You were bringing back...people that had been there before. You didn't bring anybody new at all either of those two years [1990 or 1991]. The supervision had a good idea what the terrain was like [and] what the rules were. We basically had our work rules pretty much in place and people totally accepted them.<sup>19</sup>

#### MEDICAL SURVEILLANCE OF CLEANUP WORKERS

Medical surveillance is defined as maintaining ongoing medical observation of workers for the purpose of detecting health problems that may arise as a result of conditions in the work place. The medical surveillance monitor studies the condition of workers with special emphasis given to any indication of previously unrecognized diseases or ailments. Such monitoring permits early stage treatment of developing problems, and can lead to identification of measures that are needed for the development of new primary prevention programs.<sup>20</sup>

A monitoring program was maintained throughout the response, with exposure tests (lead, hazardous compounds, etc.), screening tests (for biochemical changes associated with tissue damage), and other analyses, some of which were Alaska shoreline cleanup-specific.<sup>21</sup> In accordance with OSHA requirements (29 CFR 1910.20), the employer is also required to maintain medical records for shoreline workers through the year 2022.<sup>22</sup>

#### SAFETY QUESTIONS ASSOCIATED WITH THE USE OF CHEMICALS ON SHORELINES

Bioremediation of oiled shorelines had limited application in 1989, followed by much greater use thereafter. Two contract bioremediation teams used both Inipol and Customblen to treat about seventy-five miles of Prince William Sound and Gulf of Alaska shorelines during the response's first year. Training in safety precautions and stringent operating procedures were relied upon to ensure the health and safety of

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18. F. Brauer (Exxon), interview by Lt. Comdr. R. Gaunt, Anchorage, 19 Mar. 1992, no. F216, tape, FOSC Exxon Valdez Archive.

19. Ibid.

20. McIntyre, Birkner, and Associates, Exxon 1990 Alaska Clean-Up Operations, 8-Hour Safety and Health Refresher Training in "Medical Surveillance," 1 April 1990, no. W1969, FOSC Exxon Valdez Archive, 1-3.

21. "Hazardous compounds" include volatile aliphatic hydrocarbons, benzene, toluene, and xylene as revealed by gas chromatography testing.

22. McIntyre, Birkner, and Associates, 4.

those involved.<sup>23</sup> Concerns about dangers to those handling or otherwise exposed to these chemical agents were voiced nonetheless.

Personal protective gear for application teams was required from the beginning, and respirators were furnished. All who were involved in the handling or application of Inipol were required to receive hazardous material handling training, and instruction in the use of respirator equipment. Decontamination procedures were prescribed, and workers were subject to medical surveillance.<sup>24</sup>

Three workers were reported to have been exposed to Inipol on 14 August at Chugach Bay. The case involved shoreline workers engaged in log removal who, apparently after becoming warm in the afternoon sun, removed their gloves and rolled up their sleeves near an Inipol-treated segment. Two of the three developed skin blisters and the third reported feeling a headache. Although medical authorities did not believe that the ailments were Inipol-related, tests were conducted on the trio.<sup>25</sup>

During the review period for the "1990 Exxon General Work Plan," the FOSC received correspondence on the use of chemicals from both PHS and federal OSHA authorities. Each stipulated that training for workers needed to be fully adequate, and OSHA's message contained reservations that "information provided in the plan regarding the chemical make-up of Inipol 22 and Corexit 9580 are not adequate to make a judgment as to what hazards these materials may pose for workers."<sup>26</sup>

State authorities, in consultation with federal OSHA representatives, developed comprehensive standards for workers involved in the application of "detergents, granular or liquid fertilizers and chemicals." In addition, mandatory training for personnel who would handle chemical products was prescribed.<sup>27</sup>

Later, as the 1990 cleanup operations began, directives prescribing the use of personal protective gear, including respirators, were issued by state OSHA authorities. In separate, but very similar appearing letters, both Inipol EAP 22 and Corexit 9580 were termed "recognized hazard[s] which [are] likely to cause death or serious harm if the appropriate monitoring and measuring is not performed." Alaska OSHA declared that "employers with employees handling Corexit 9580 are expected to err on the side of safety." Exxon was instructed to provide all appropriate protective gear, and provide for decontamination as might be needed. A \$10,000 fine per employee/instance was threatened, should compliance be neglected.<sup>28</sup>

23. USCG, "Bioremediation Operations Overview" (handout provided to participants at the 1990 HAZWOPER Training sessions), 1989 program summary section, no. W1384, FOSC Exxon Valdez Archive.

24. T. E. Stuart, Jr. (Alaska OSHA), letter to C. A. Coe (federal OSHA), 13 June 1990, no. W1580, FOSC Exxon Valdez Archive. The same communication shows evidence that there may have been jurisdictional authority questions existing between the two OSHA agencies.

25. Lt. D. Ash, "Possible Bioremediation Material Exposure Cases," 14 Aug. 1989, C1749, FOSC Exxon Valdez Archive.

26. Comdr. S. Corp. R. S., M.P.H. (PHS), letter to Rear Adm. D. E. Ciancaglini, 21 Mar. 1990, no. W502; and R. S. Terrill (OSHA), letter to Capt. D. E. Bodron, 22 Mar. 1990, no. W1615, FOSC Exxon Valdez Archive.

27. J. Sampson (ADOL), letter to O. Harrison (Exxon), 27 Mar. 1990, no. W981, FOSC Exxon Valdez Archive.

28. S. Godsoe (Alaska OSHA), letter to F. Brauer (Exxon), 21 May 1990, no. W1083; and S. Godsoe (Alaska OSHA), letter to F. Brauer (Exxon), 19 May 1990, no. W1878, FOSC Exxon Valdez Archive.

A regional EPA leader (Carl Lautenberger) reported that there were approximately seventy staff employees in 1989, based in Valdez, testing and measuring levels of potential toxics. Lautenberger reported that, as of 1992, his agency was not aware of any documented incident of longer-term or delayed ill effects upon human health as a result of chemical fertilizer or solvent use. He also noted that the issue is still being debated, and that "we may not have final answers for several years."<sup>29</sup>

Long-term questions concerning the safety of the bioremediation compounds themselves, and the procedures employed in their handling, remain. In 1992, the *Boston Globe* reported a number of cases of serious illnesses among former cleanup workers, allegedly associated with the use of Inipol.<sup>30</sup> The matter is likely to remain unresolved for some time, and worker health issues may ultimately be litigated, perhaps in significant numbers.

#### SHORELINE WORKER TRAINING

Initial safety training sessions for workers were organized and conducted on 1 April, the eighth day of the spill. A total of eighty workers were on hand for the first sessions. The emphasis was on boating safety, protection against hypothermia, shoreline safety, precautions about bears, toxic properties of oil, hearing protection, decontamination hygiene, and the use of protective equipment. Eventually, a total of fifteen thousand employees received safety training. Med-Tox Associates, working in cooperation with VECO, developed and maintained a computer-based record of all persons who participated.<sup>31</sup> In addition to pre-service training, each work crew chief was expected to conduct daily job site health and safety meetings, and to document those sessions in the daily site log.<sup>32</sup> At the meetings, plans for the day's work were discussed, the particular location was considered for special safety hazards, and any necessary precautions were issued.<sup>33</sup>

Other training programs were developed for several special topics. Those included potable water maintenance and handling, respiratory protection requirements, use of special chemicals for remedial shoreline work (including nutrient-enhancing fertilizers and emulsifying agents), and "confined space entry" training. All training activities were structured so as to be in conformity with OSHA work safety requirements, and they were reviewed by both state and federal OSHA representatives, as well as by union leaders and corporate representatives.<sup>34</sup>

One focus of the Laborer's National Health and Safety Fund visit was the amount of training that was being provided to workers prior to their beginning work assignments. The committee took the stance that a program forty hours in duration had been

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29. C. Lautenberger (EPA), interview by Lt. Comdr. R. Gaunt, Anchorage, 26 Mar. 1992, no. F229, notes, FOSC Exxon Valdez Archive.

30. W. Coughlin, "Doctor Says Oil, Cleanup Toxins Fatal," *The Seattle Times*, 10 May 1992, sec. B. This article is a reprint from the *Boston Globe*.

31. Wade, 214.

32. Exxon, "Exxon Valdez Incident Health and Safety Program Manual," 7.

33. Brauer, interview, 19 Mar. 1992.

34. Wade, 215.

specified by OSHA requirements, and that practices then in effect (a ninety minute orientation, according to the committee) were clearly inadequate.<sup>35</sup>

The argument against the forty-hour standard was that the oil had lost most of its toxicity in the first several days following the spill. As noted above, the U.S. Public Health Service found that the training was adequate.

## FATALITIES

Officially, one life was lost through an accident related to the *Exxon Valdez* response. Three additional lives, and probably a fourth, were lost in other incidents less directly attributable to the response. The lone accidental death involved a Nana-Marriott employee who was apparently the victim of injuries suffered aboard the M/V *Coastal Star*, during an unauthorized kitchen elevator ride. The worker was found crushed by an elevator that was not designed to carry human passengers, and which he had specifically been directed not to ride in. A medical officer from the USS *Juneau* was dispatched to the scene, and declared the man dead at 2038 on 22 May 1989, about two hours after he had been found by coworkers.<sup>36</sup>

On 2 August an Exxon employee collapsed on the M/V *Rex Horton*, apparently of a heart attack. A helicopter was summoned, brought him from the Tonsina Bay location to the hospital at Homer, where he was pronounced dead upon arrival.<sup>37</sup> A third incident involving fatalities concerned the loss of the tug *Steadfast*, which had been a response support vessel until mid-September 1989. After release from the response, the *Steadfast* departing from Valdez with a tow in stormy weather, was lost with its crew of three.<sup>38</sup>

No fatalities occurred during shoreline cleanup operations, despite the presence of thousands of workers and potentially dangerous conditions. The only death that may be classified as an accident suffered during performance of response duties was that of the *Coastal Star* kitchen worker. The fatality rate for the 1989 cleanup response was reported by Exxon to be 0.1 per million hours worked.<sup>39</sup> No fatalities were reported during subsequent years of response activity.

## WINTER SAFETY, 1989–90

As the winter of 1989–90 approached, operations were drastically scaled back to field assessment and small-scale waste pick up operations. Exxon instituted a winter survival course, making an eight-hour instructional program mandatory for all who used Exxon-chartered aircraft. In addition, each passenger was required to be equipped with a cold water survival suit that was furnished by the company. Another safety

35. Occupational Health and Safety Act (29 CFR 1910.120); and Laborer's National Health and Safety Fund, "Report of the Public Health Team Assessing the Exxon Valdez Oil Spill Cleanup," 3 and 13–14.

36. USS *Juneau*, message to several commands, 22 May 1989, no. C244, FOSC Exxon Valdez Archive.

37. USCG Pollution Report R 030821Z August 1989 (PWS Polrep 156), sec. (2)(A).

38. Northern Pacific Search and Rescue coordinator, Situation Report (Sitrep) 1, P 261121Z September 1989, sec. 1 (A), (B), and (D).

39. Exxon, "Alaska Winter Program" (part of daily report for 17 Sept. 1989), safety section, FOSC Exxon Valdez Daily Archive.

precaution was that single engine aircraft could be used only in pairs for Exxon operations during the winter.<sup>40</sup>

Both Exxon and the FOSC were reluctant to encourage volunteer cleanup operations during the winter months, even though the state of Alaska was offering to sponsor several volunteer efforts. Exxon issued a position paper that declared flatly: "Based on safety and other considerations, Exxon will not encourage any volunteer programs."<sup>41</sup> On several occasions, the FOSC found it necessary to discourage official efforts of volunteer organizations to stage cleanup programs during the winter months. The FOSC's posture was stated in the Winter Plan: "ICP [incident command post] supervisors who become aware of volunteer efforts in their zone should point out to the organizers the hazards of being in the Alaskan wilderness in winter. Due to these hazards, the ICP supervisor should attempt to discourage these efforts."<sup>42</sup> The FOSC further discouraged volunteers by informing them that they were expected to bear all related expenses, and to assure that a plan (to include waste removal) was in place prior to commencing operations.<sup>43</sup> Despite the lack of official sanction, limited volunteer cleanup operations were conducted in both western Alaska and Prince William Sound. (At one late winter operation in Prince William Sound, two separate medical emergencies took place during a volunteer project. One individual needed to be medivaced for hospital care.)<sup>44</sup>

Exxon took other winter precautions to enhance safety. Any vessel used in winter operations needed to be at least 150 feet in length. A full-time weather consultant was engaged to provide twice-daily weather forecasts for each of the marine areas. (The data was also made available to all interested parties.) Recognizing that many persons involved in the response were recent newcomers not familiar with conditions in Alaska, Exxon held training sessions in earthquake survival and in winter defensive driving. Over seven hundred persons took part in those sessions. "Personnel safety," Exxon stated, "has been and will remain the number one priority."<sup>45</sup>

As an added precaution, the Coast Guard maintained helicopter response capabilities at the Cordova Station during the winter months in 1989–90. That location had traditionally ceased its activities during cold weather months, transferring air operations to Kodiak. The decision to maintain the Cordova helicopter mission during winter months was made, in view of planned overflight operations, scientific studies, emergency response programs, and other activities projected for the Prince William Sound area.<sup>46</sup> The mayor of Cordova also made a special request to the Coast Guard in support of the mission.

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40. USCG, "Operations Steering Committee" (summary of Operations Steering Committee meeting, 3 Oct. 1989), no. W266, FOSC Exxon Valdez Archive.

41. Exxon, "Volunteer Programs," 31 Jan. 1990, no. W449, FOSC Exxon Valdez Archive.

42. USCG, "FOSC Exxon Valdez Winter Plan 1989–90," revision 1, annex C, appendix 2, 1 Nov. 1989, no. W102, FOSC Exxon Valdez Archive, 1.

43. Rear Adm. D. Ciancaglini, letter to N. Lethcoe (Prince William Sound Conservation Alliance), 14 Feb. 1990, no. W424, FOSC Exxon Valdez Archive.

44. Comdr. D. Rome, conversation record by Comdr. E. Thompson, 2 Apr. 1990, no. W974, FOSC Exxon Valdez Archive.

45. Exxon, "1990 General Plan, March Planning Document," appendix 2, 4.

46. USCG, "FOSC Exxon Valdez Winterplan 1989–90," annex C, appendix 6, 1–3.

## WORKER SAFETY, 1990 AND THEREAFTER

In 1990, and during subsequent years, it was easier to maintain safe field operations. There were fewer workers, and a diminished amount of work was being done. More importantly perhaps, the shorelines themselves were safer places. They were no longer covered with thick, slippery oil, as in 1989. Footing was better, and the chances of suffering splashes of liquid oil, or falling into an oil pool, were greatly reduced. In addition, the workforce consisted, to a large degree, of veterans from the 1989 response. They were already safety-trained, they knew what they were doing, and practiced the do's and don'ts that help to prevent injuries. Exxon's safety and health manager Fred Brauer also gave substantial credit to the quality of workers who made up the work crews. He stated that they were good employees, and they "bought into" what Exxon was trying to accomplish in their safety programs.<sup>47</sup>

## SUMMARY

The FOSC has basic responsibility to assure that the worker health and safety concerns that arise during an oil spill response are addressed. A variety of federal and state agencies have more specific mandates or expertise that bear on health and safety-related questions.

Exxon placed emphasis on worker training and supervision and was able to maintain a good safety record despite the many hazards associated with the shoreline cleanup and mobilizing so large a workforce so quickly. Site visits made in 1989 by teams sponsored by the U.S. Public Health Service and by a labor group produced vastly differing perspectives on the adequacy of worker training and protection from the toxic effects of oil, however.

Winter safety was a particular problem due to the severity of environmental conditions in the region during the winter months. Assuring winter safety was complicated by volunteer cleanup efforts, encouraged by state officials, that took place during the winter of 1989-90. Both Exxon and the FOSC undertook strenuous efforts to discourage these activities.

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47. Brauer, interview, 19 Mar. 1992.



## CHAPTER 18. COMMUNITY CONCERNS

### OVERVIEW

Oil spills can have ramifications that go beyond the oil floating on the water or washed up on shorelines. Oil spills impact people's lives and livelihoods. The *Exxon Valdez* oil spill greatly affected those who lived or earned their incomes in the areas it impacted. This chapter examines the impact on subsistence users, commercial and sport fishermen, and on community health. Two issue areas of particular interest to the FOSC are (a) establishing priorities for the cleanup in light of subsistence, commercial fishing, and recreational use of the area affected; and (b) assuring the safety of subsistence foods.

### SUBSISTENCE IMPACTS

One very emotional and important consideration was the presence of oil within traditional Alaskan subsistence hunting and fishing grounds. The coastal regions affected by the spill contain a number of Native villages where residents' livelihoods depend upon their ability to secure a dependable supply of food from the sea. When the spill threatened these supplies, the threat was widely perceived as being to the entire way of life, dependent as it was on subsistence harvest.<sup>1</sup>

Some critics charged that seafood safety was not given sufficient attention. The matter received less media attention than such topics as oiled wildlife. "No one knows for sure how serious the risk, because so little funding is available to study the subsistence catch," wrote one critic.<sup>2</sup> While commercial fishing became subject to a strict "zero tolerance" policy, Native subsistence users were told by the U.S. Food and Drug Administration (FDA) that "if the fish smells, looks, and tastes alright, it is probably safe to eat."<sup>3</sup> Tom Nighswander of the Alaska Area Native Health Service reacted to what he considered a gross discrepancy between commercial and subsistence standards by charging that the matter "has some racial overtones."<sup>4</sup> An official from North Pacific Rim, a nonprofit group interested in the welfare of Native villagers, observed that, "It's become apparent they're going to have a problem feeding themselves."<sup>5</sup> Hunting and fishing are important to local economies in some of the areas hit hardest by the spill, particularly in Chenega Bay and Tatitlek. Native leaders there worried about the future of those villages, and the state assigned a "disaster psychologist" to help residents cope with feelings of grief and anger.<sup>6</sup>

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1. M. A. Gwinn, "Oil Spill Threatens Natives' Way of Life," *The Seattle Times*, 17 Apr. 1989, sec. A.

2. M. Barinaga, "Alaskan Oil Spill: Health Risks Uncovered," *News & Comment, Science* 245 (4 Aug. 1989): 463.

3. *Ibid.* While the author of the article apparently regarded such procedures as giving light attention to an important matter, they actually represent organoleptic testing, a simple smell, taste and see technique which is widely felt to be a valid method of evaluating safe edibility of seafoods. The method was commonly employed, for example, by ADEC personnel in 1989.

4. *Ibid.* Nighswander later helped found, and chaired the Oil Spill Health Task Force.

5. Gwinn, 17 Apr. 1989.

6. *Ibid.*



A typical American family living in the western part of the United States purchases and consumes 222 pounds per capita of fish, meats, and poultry annually. The most recent surveys taken among Native subsistence villages prior to the spill revealed that per capita subsistence food harvest levels averaged 399.6 pounds over the fifteen communities sampled. In most communities, nearly all households "attempted" subsistence gathering and/or used harvested resources.<sup>7</sup> Between 73 and 91 percent of those subsistence foods were harvested from the sea. Included are salmon and other finfish, marine mammals (seals and sea lions), and marine invertebrates such as clams and mussels. Other subsistence foods potentially affected by the spill were deer and waterfowl.<sup>8</sup>

Alarm spread quickly through Native villages following the release of massive amounts of floating oil from the grounded *Exxon Valdez*. Village residents observed the presence of oil in traditional harvesting areas within a few days after the spill. In addition, they discovered otters, birds, and shellfish killed or fouled by crude oil. Many believed that other animals, including deer and whales, would suffer similar consequences. Villagers were alarmed to learn that commercial fishing operations had been closed due to health concerns. If commercial fishing was closed, they reasoned, then perhaps fish were unsafe for human consumption. Could a food shortage be looming? What would be the impacts of forced reliance on unfamiliar food sources, particularly among the elderly?<sup>9</sup>

About two weeks following the spill, Tom Nighswander met with Elizabeth Ward of the Alaska Division of Public Health (ADPH) to discuss subsistence foods concerns. Problems were already surfacing due to rumors and confusion in the existing subsistence food information networks. Within days, a new interagency organization was formed. The first meeting of the Oil Spill Health Task Force (OSHTF) was held during the last week in April, and later meetings took place biweekly. The organization came to serve as a network for information transfer to Native villages and individuals. Membership consisted of the National Oceanic and Atmospheric Administration (NOAA), Indian Health Services, five Native organizations, and three cognizant agencies of the state, including Alaska Department of Environmental Conservation (ADEC), Alaska Department of Fish and Game (ADF&G), and Health and Social Services. Another important function of the task force was to review plans for sampling subsistence foods, and to review findings from the testing which was to be conducted.<sup>10</sup>

A number of meetings were held at Native villages during the spring of 1989, with Coast Guard involvement, to discuss subsistence issues and concerns. Natives were particularly insistent that credible studies be undertaken to assure the safety of shellfish,

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7. J. A. Fall, "Subsistence Uses of Fish and Wildlife and the Exxon Valdez Oil Spill" (paper presented at the 18th annual meeting of the Alaska Anthropological Association, Anchorage, Alaska, 23 Mar. 1991). See table "Some Characteristics of Subsistence Uses in the Study Communities Before the Exxon Valdez Oil Spill."

8. A. H. Walker and L. J. Field, "Subsistence Fisheries and the Exxon Valdez: Human Health Concerns," in *Proceedings of the 1991 International Oil Spill Conference* (American Petroleum Institute pub. no. 4529, 1991), 441.

9. *Ibid.*

10. ADF&G (Div. of Subsistence), "The Task Force: Our Mission," *The Oil Spill Health Task Force* (Feb. 1990), no. W251, FOSC Exxon Valdez Archive.

subsistence fish, and other traditional food sources that may have been contaminated. In addition, they voiced hopes that they might be equipped with the means to make on-site assessments of subsistence food safety themselves.<sup>11</sup>

The epidemiology section of ADPH issued a series of advisory bulletins throughout the summer of 1989. At first these communications urged caution regarding the use of fish for food. "If the fish smell or taste of petroleum, they should not be eaten," was the initial message. On the other hand, "if they don't, it is almost certainly safe to eat," the 5 May bulletin continued.<sup>12</sup>

A July bulletin issued by the section of epidemiology reported that three hundred samples of subsistence food items had been tested for the presence of oil contaminants. None showed signs of contamination. The bulletin stressed the broad range of items tested, the number of agencies involved, the number of locations from which samples were gathered, and a theme of "working together" to resolve health concerns.<sup>13</sup> Another bulletin, published in September, continued the theme that evidence was indicating little or no risk with most seafoods. It stated, however, that more testing needed to be done, particularly with shellfish.<sup>14</sup>

The major tasks confronting health authorities were: (a) making sure that scientific studies were complete and accurate in the information they generated about the safety of subsistence foods; and (b) finding effective ways to communicate that information to Native people, many of whom were frightened or skeptical. Several agencies worked to develop scientifically well-founded answers to the questions being raised about the safety of subsistence foods. Scientists from ADF&G, the Alaska Public Health Service, and Exxon worked cooperatively. The Federal On Scene Coordinator (FOSC) considered subsistence food safety to be a priority consideration in the cleanup. Consistent with this, the FOSC directed NOAA, the Coast Guard's scientific advisor, to assume a lead role both in scientific subsistence studies and in helping to deal with the fears of Natives about the safety of subsistence products.<sup>15</sup>

The National Oceanic and Atmospheric Administration set about to assist Native villagers in finding alternatives to the organoleptic method of testing subsistence harvests, which cannot be used to detect very low levels of hydrocarbon contamination. The concern was for the cumulative effects of possibly consuming low levels of contaminants over an extended period.

11. Walker and Field, 442.

12. J. Middaugh, M.D., ed., "Oil Spill Public Health Advice," *State of Alaska Epidemiology Bulletin*, no. 6 (5 May 1989). This "Organoleptic testing" was widely prescribed as a means of determining the safety of seafood products. But the test was not always accepted or trusted by Natives.

13. J. Middaugh, M.D., ed., "Oil Spill Public Health Advice-Report No. 2," *State of Alaska Epidemiology Bulletin*, no. 8 (14 July 1989).

14. J. Middaugh, M.D., ed., "Oil Spill Public Health Advice-Report No. 3," *State of Alaska Epidemiology Bulletin*, no. 16 (22 Sept. 1989).

15. Walker and Field, 442. Under the National Contingency Plan, 40 CFR 300.23 (b)(2), the U.S. Department of Commerce, through NOAA, provides "scientific expertise on living marine resources for which it is responsible and their habitats, including endangered species and marine mammals...including assessments of the hazards that may be involved."

Natives familiar with the commercial fishing industry suggested that high-performance liquid chromatography (HPLC) might be used to detect contamination, as at high-volume fish processing centers. The National Oceanic and Atmospheric Administration evaluated the feasibility of HPLC scanning procedures, and determined that such an approach would not be practical to use within villages, since use of the system required a fairly sophisticated level of technical training and data were difficult to interpret. The National Oceanic and Atmospheric Administration disseminated these recommendations to Native communities through the Oil Spill Health Task Force network.<sup>16</sup>

It was necessary to conduct scientific testing that would be accepted by Native communities as being credible and comprehensive. Exxon and NOAA, therefore, signed a memorandum of understanding to develop a plan that would meet these needs. The agreement stipulated that specimens would be gathered from a wide range of subsistence harvest areas by teams consisting of both Exxon and NOAA scientists. Samples would then be sent to the NOAA/National Marine Fisheries Service laboratories in Seattle for analysis and evaluation, and results made public. Again, the OSHTF would act as the forum for discussion of results, and as a conduit for information to the communities.<sup>17</sup>

A total of thirteen subsistence fishing areas were selected for sampling. These included two in Prince William Sound, three in the lower Cook Inlet, and eight in the vicinity of Kodiak Island. Target species included shellfish, bottomfish (principally halibut), and salmon. A broad array of other species were taken in small numbers, including sea urchins, Pacific cod, snails, limpets, and Dolly Varden. Specimens were gathered periodically at each site beginning in July, and extending over a period that went well into 1990.<sup>18</sup>

A total of 353 tissue samples were analyzed for contamination, including 143 from intertidal shellfish and 210 from finfish. The highest concentrations of total aromatic contaminant (TAC) came from samples of shellfish collected from Windy Bay, Kodiak, Chenega Bay, and Old Harbor (figures 18.1–18.4). These samples revealed in excess of one hundred parts per billion (ppb) levels. Mussels from Windy Bay (a heavily oiled area on the Kenai Peninsula) and clams from Near Island (in the vicinity of the Kodiak city boat harbor) had TAC levels of over one thousand parts per billion. Only one finfish sample tested at higher than one hundred parts per billion levels.<sup>19</sup>

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16. Walker and Field, 443.

17. USCG, "NOAA Subsistence and Toxicological Activities in Support of Human Health Issues on the Exxon Valdez," 2 Aug. 1989, no. C1537, FOSSC Exxon Valdez Archive.

18. Walker and Field, 443.

19. *Ibid.*

## 1989 Subsistence Fish &amp; Shellfish Studies

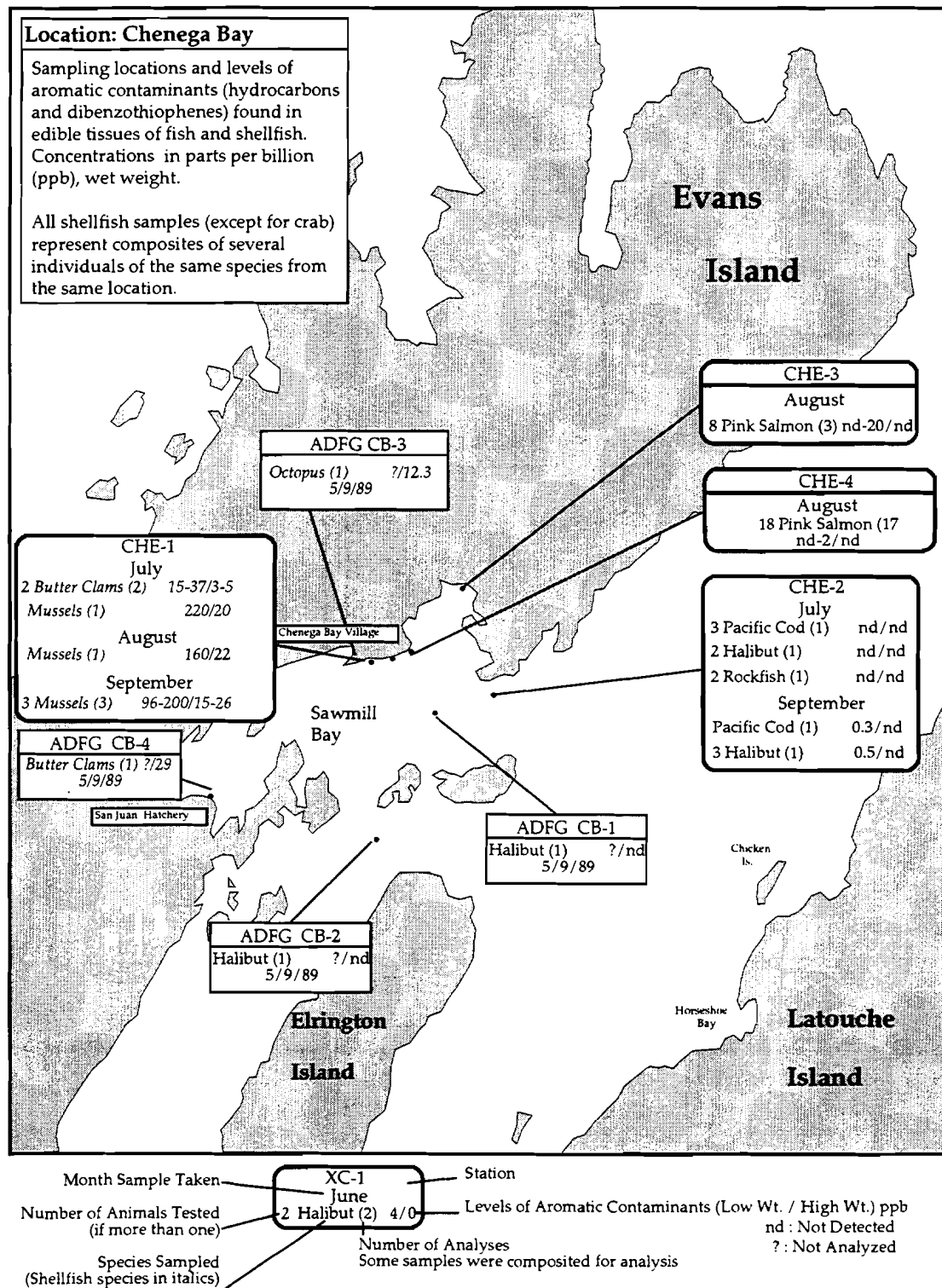


Figure 18.1 Results of 1989 subsistence fishing contamination studies (Chenega Bay) as they were distributed to Alaskan Natives.

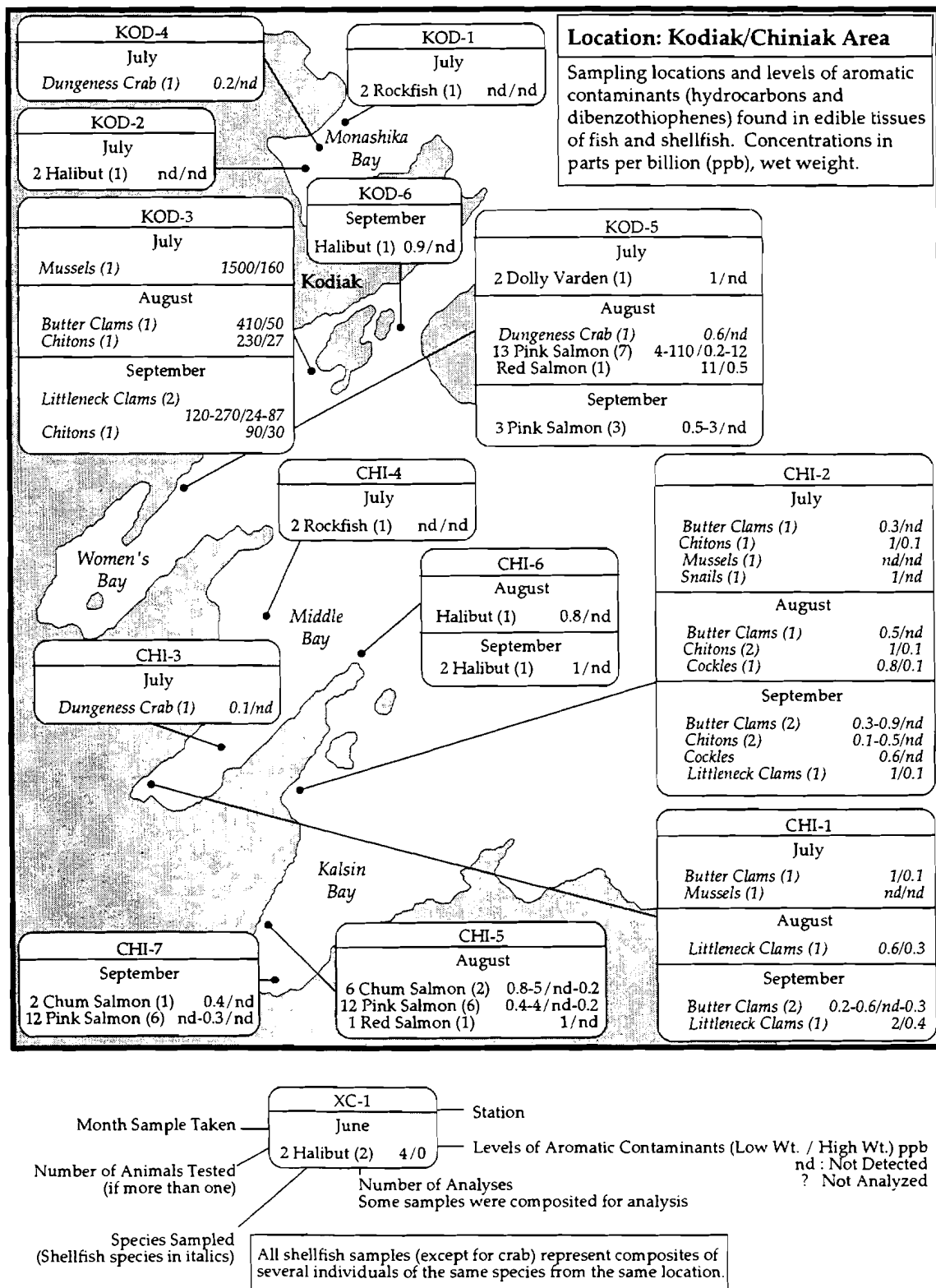


Figure 18.2 Results of 1989 subsistence fishing contamination studies (Kodiak) as they were distributed to Alaskan Natives.

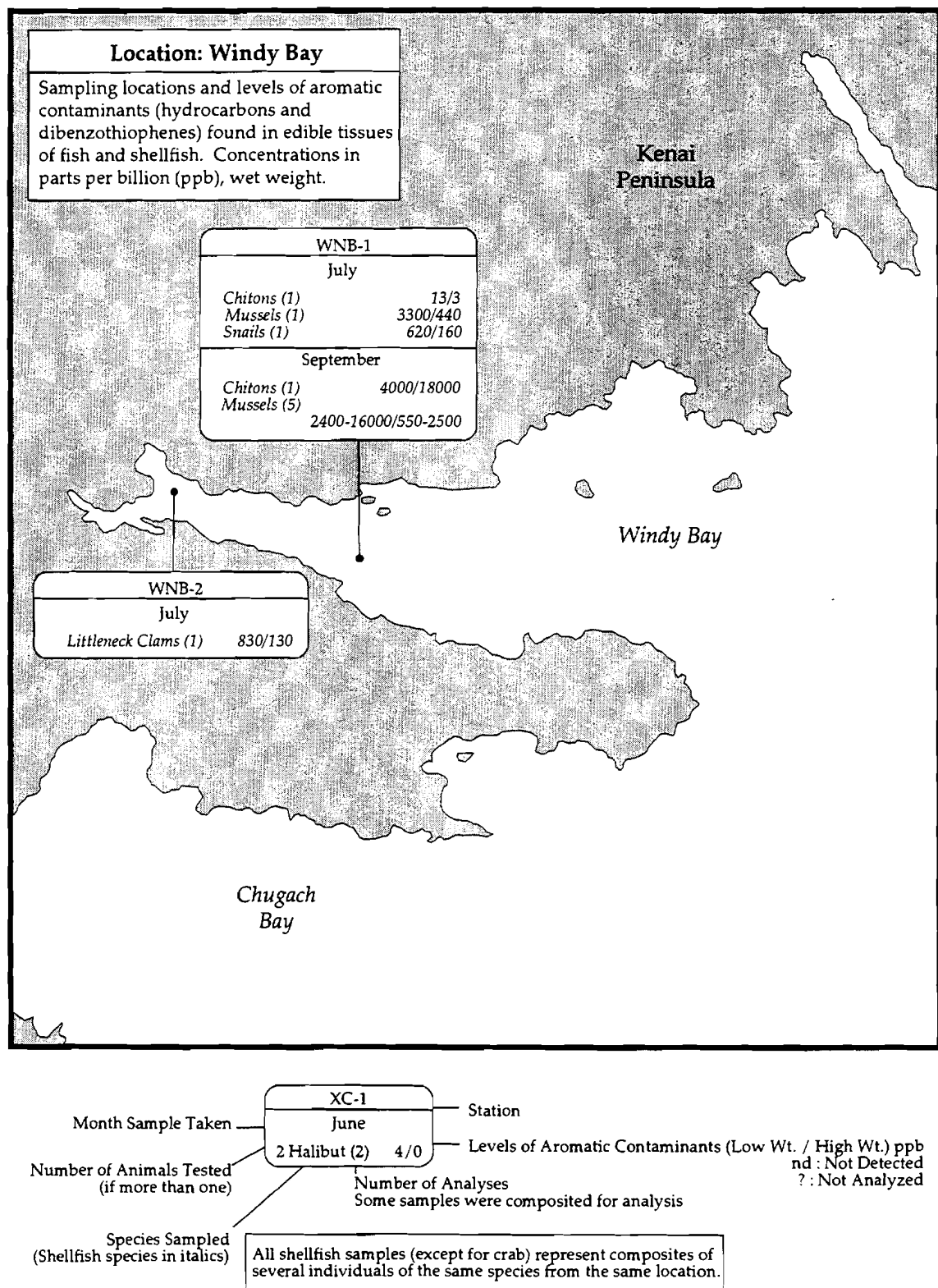


Figure 18.3 Results of 1989 subsistence fishing contamination studies (Windy Bay) as they were distributed to Alaskan Natives.

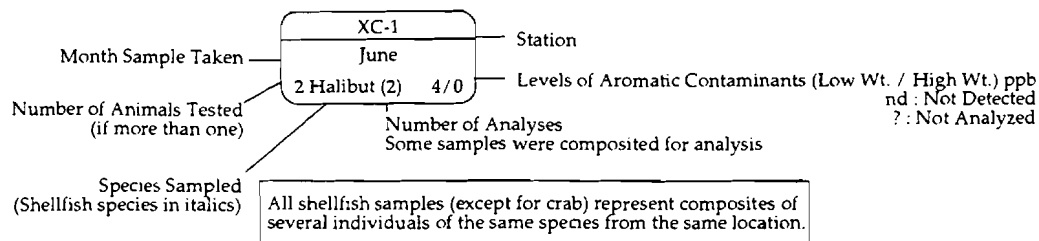
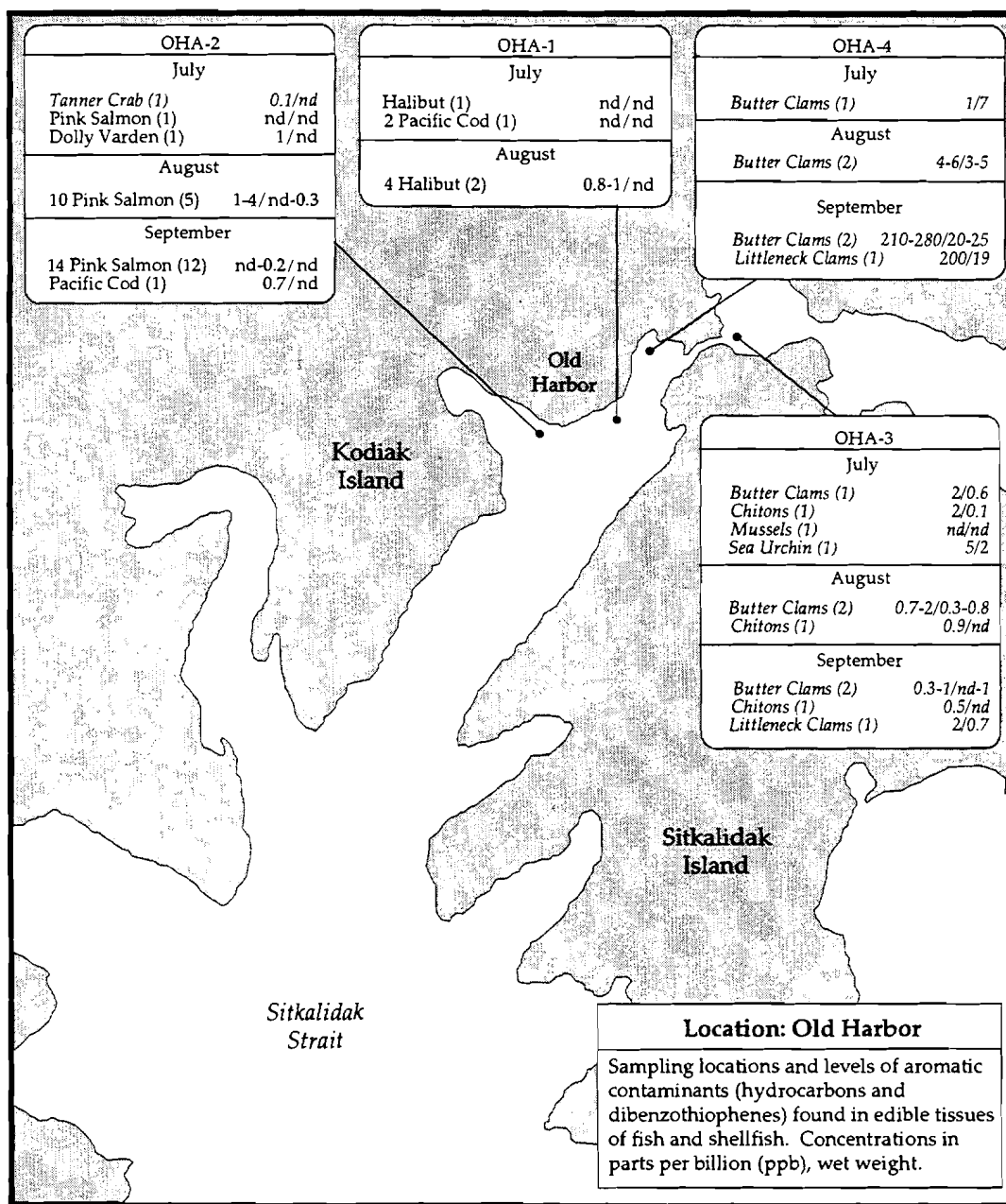


Figure 18.4 Results of 1989 subsistence fishing contamination studies (Old Harbor) as they were distributed to Alaskan Natives.

Whether or not these relatively low TAC levels represented good news was less clear. A confounding factor was that there were no established standards of human consumption tolerance for aromatic contaminants.<sup>20</sup> The National Oceanic and Atmospheric Administration arranged a meeting in Seattle, in September 1989, for a comprehensive evaluation of available data, in the hope of resolving this problem.

The meeting was attended by representatives of NOAA, the Food and Drug Administration, the National Institute for Environmental Health Sciences, the Agency for Toxic Substances and Disease Registry (ATSDR),<sup>21</sup> the University of Alaska,<sup>22</sup> and Exxon Biomedical Research Services.<sup>23</sup> The group came to be referred to as the "expert committee."

Taking into consideration the available scientific data and a number of Alaska-specific factors, the group determined that the July samples of finfish appeared to indicate that finfish were safe for human consumption, while shellfish from the most contaminated areas should be avoided. The committee added, however, that "findings were preliminary, and based on limited data."<sup>24</sup> A second meeting was held in February, after data from samples collected during the fall and winter months had been evaluated. Once again, finfish were found to be edible, but cautionary warnings were issued regarding shellfish consumption from heavily oiled areas like Windy Bay.<sup>25</sup>

Efforts continued to communicate these scientific findings to Natives in an understandable and useful manner. Health risks and the expert committee's interpretation of the data were stressed. The Oil Spill Health Task Force focused its information dissemination activities around the theme that subsistence harvesters should be provided with information that would permit them to make their own decisions regarding resumption of their way of life. The state epidemiologist's office issued additional advisory bulletins, and members of the OSHTF journeyed to subsistence villages in October 1989 to present the findings of studies and answer questions.<sup>26</sup>

Exxon recognized the potential for food shortages resulting from the oil spill's disruption of traditional subsistence food gathering patterns in Native villages, particularly in Chenega Bay and Tatitlek. To address this concern, Exxon initiated a program in mid-April of 1989 to directly supply groceries to the villages. This program was followed by additional supplemental food programs. These programs distributed store-purchased groceries, fresh caught salmon, and a variety of other traditional

20. Ibid.

21. USCG, "Marine Safety Manual," Commandant Instruction no. M16000.7, vol. 6, ch. 7, sec. (7)(d)(4)(e). The Marine Safety Manual notes that, while not specifically listed in the National Contingency Plan (NCP) as a special force, the FOSC may find it useful to call on ATSDR public health advisors when public health-related problems arise.

22. The University of Alaska representative at the Seattle meeting was from the Fishing Industrial Technical Center, University of Alaska (Fairbanks), Kodiak Island center.

23. Walker and Field, 444.

24. J. Middaugh, M.D., ed., "Oil Spill Health Advice-Report No. 3."

25. J. Middaugh, M.D., ed., "Summary of Findings of Toxicological Expert Committee for Evaluating Data Related to the Consumption of Marine Subsistence Foods (Exxon Valdez Oil Spill), Seattle, Washington, February 21-22 1990," *State of Alaska Epidemiology Bulletin*, no. 6 (28 Feb. 1990).

26. Walker and Field, 444.



subsistence foods. Over time the program was expanded to include all ten of the villages in the spill affected area (table 18.1).<sup>27</sup>

TABLE 18.1

## Subsistence Food Replacement Programs

Description	Source	Destination	Content	Weight (in lb.)
Fishlift #1	Tyonek	Chenega Bay	King Salmon	
<b>Sub-Total</b>				<b>7,000</b>
Fishlift #2	Angoon	Chenega Bay English Bay Port Graham Tatitlek	Halibut, Seaweed, Seal, and Venison	
<b>Sub-Total</b>				<b>16,000</b>
Fishlift #3	Kenai	English Bay	Silver Salmon	
<b>Sub-Total</b>				<b>800</b>
Kodiak Village Program	Support Silver Salmon Fishing Project	Kodiak City Akhiok Karluk Larsen Bay Old Harbor Ouzinkie Port Lions	Silver Salmon (canned or frozen)	17,800 2,700 3,100 4,900 8,200 6,000 7,800
<b>Sub-Total</b>				<b>50,500</b>
Chugach Alaska Corp. Program	Chugach Fisheries Inc. (CFI)	Chenega Bay English Bay Port Graham Tatitlek Tatitlek	Sockeye (Red), Chum (Dog), & Coho (Silver) Salmon	
<b>Sub-Total</b>				<b>40,000</b>
<b>GRAND TOTAL</b>				<b>114,300</b>

Source: Exxon, "Subsistence Programs," 21 Apr. 1993, no. F797, FOSC Exxon Valdez Archive.

Although scientists involved in subsistence foods analysis felt that finfish were safe for consumption, and members of the Oil Spill Health Task Force sought to communicate that message, the message appears not to have been completely accepted. (Shellfish consumption was a different matter, with authorities not yet providing an all-clear signal, even as late as 1992.) Several factors seemed to contribute to Native villagers'

27. Exxon, "Village Supplemental Food Programs," 21 Apr. 1993, no. F797, FOSC Exxon Valdez Archive, 138.

continued skepticism. There was, for example, a feeling that unhealthy marine mammals, sometimes found in the response area, were convincing evidence that there was still something wrong in the marine environment. Also, there was a perception among some Native groups that the "oil is still out there," and that a hidden (probably submerged) oil mass continued to contaminate the environment.<sup>28</sup> Periodically, beginning in 1989 and continuing through 1992, rumors of "just discovered" underwater oil lenses circulated. Substantive support for such claims could not be found.<sup>29</sup>

In 1990 and 1991 there were periodic visits to Native villages by scientists who sought to quell continued subsistence fears. Though headway may have been made, the fears remained. Two additional factors may have served to complicate resolution of the issue. First, village residents seemed to regard Exxon's involvement in the information-dissemination process as self-serving, thereby creating a credibility problem. Second, the continuing nonrelease of damage assessment findings appeared to have fed notions that there might be something that "they are not telling us." In any event, despite the sincere efforts of the OSHTF and others who sought to convey a safe-subsistence message, the message was not universally accepted.<sup>30</sup>

One additional factor which influenced Natives' acceptance of the message OSHTF tried to convey was that they were also being presented with conflicting interpretations of the data by groups outside the established fora, or with contrasting advice based on independently collected data. This served to cast doubt on the validity of OSHTF's message. At a June 1992 briefing, members of the Task Force complained that each trip to Native villages had produced counter-claims to their advice that they found difficult to refute. In each case, the OSHTF had been unable to inspect the data upon which the counter-claims had been based.<sup>31</sup>

According to Dr. Tom Nighswander, both Vice Admiral Robbins and Rear Admiral Ciancaglini regarded subsistence issues as being of "paramount importance." The Coast Guard lacked expertise, according to Nighswander, and depended heavily upon its NOAA science advisors for the lead roles in subsistence matters. Vice Admiral Robbins, during his visits to villages, and as he learned about subsistence issues from other sources, became very supportive of studies designed to determine the quality and safety of substance foods. The committee later had less direct contact with Rear Admiral Ciancaglini, reported Nighswander, but knew that "he was there if needed."

An incident which occurred in 1992 was regarded by OSHTF members as tangible evidence of the FOSC's commitment to the importance of substance foods questions. In the spring of 1992, as the end of the response neared, and activities were being funded through *Exxon Valdez* settlement monies, the committee determined that

28. J. Fall (ADF&G), interview by Lt. Comdr. R. Gaunt, Anchorage, 26 Mar. 1992, no. F230, FOSC Exxon Valdez Archive.

29. Telephone inquiries made on 15 July 1989 to ADEC and ADF&G officials Kuwada, Fall and Looney produced a common response; they had occasionally heard rumors related to such findings, but had never seen hard evidence that gave any substance to any of those reports.

30. Fall, interview, 26 Mar. 1992.

31. Dr. T. Leschine (FOSC staff), "Oil Spill Health Task Force" (notes taken from briefing at Key Bank Bldg., Anchorage, 1 June 1992), no. F796, FOSC Exxon Valdez Archive.

another round of village visits would be desirable. Rear Admiral Ciancaglini's support of that project helped make it a reality, and led, so far as the committee's chairman was concerned, to a very worthwhile interaction with villagers.<sup>32</sup>

"Some had the idea that the function of the meetings was to persuade Natives that everything was alright, and that subsistence lifestyles could be safely resumed. That was not the function of the group," commented Judy Meidinger who served as Exxon's Native affairs consultant, and who participated in the visits of the OSHTF. "The real purpose of the visits," she continued, "was to share information, and to try to communicate it in an understandable manner so that residents could make up their own minds about important questions about the food supply."<sup>33</sup>

The ADF&G Subsistence Foods Division has no record of illness or health complications resulting from the ingestion of oil-tainted fish or game. There were scattered and unconfirmed reports of persons "not feeling well" after consumption of such foods, but in each case unconsumed portions were discarded or not surrendered to health authorities for analysis. There are also no studies to show whether or not any illnesses arose as a result of consuming unfamiliar food products (pork chops, for example) that were substituted into normal diets when subsistence foods were not available.<sup>34</sup>

## THE SPILL AND COMMERCIAL FISHING

Measures taken in 1989 to protect commercial fishing in Alaska from the effects of the spill were motivated by concerns both for possible contamination of the projected catch (a safety consideration) and for protecting the image of the Alaskan fishing industry (an economic consideration). Monitoring studies began early in the spill, conducted by NOAA's National Marine Fisheries Service, ADEC, the Alaska Department of Fish and Game, and the U.S. Food and Drug Administration. These studies were intended to monitor the quality of seafoods in the spill area, and to aid in the prediction of later effects on marine fish and mammals.

In May, the Alaska Seafood Marketing Institute (ASMI) announced that it was launching a \$41 million campaign to assure consumers and wholesalers that the industry was doing business as usual, despite the spill. Although abundant supplies of untainted fish continued to be harvested, the institute feared that "perception in the marketplace...could kill any chance to sell Alaska seafood." Exxon, in the meantime, offered to pay the costs of this campaign to reassure the world that the quality of seafood on the market was still up to the traditionally high Alaskan standards.<sup>35</sup>

The Alaska Department of Environmental Conservation and the Alaska Department of Fish and Game prohibited commercial salmon fishing in Prince William Sound in

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32. T. Nighswander (OSHTF), conversation record by Lt. Comdr. R. Gaunt, 29 Apr. 1993, no. F803, FOSC Exxon Valdez Archive.

33. J. Meidinger (Exxon), interview by Lt. Comdr. R. Gaunt, Anchorage, 24 Mar. 1992, no. F759, notes, FOSC Exxon Valdez Archive.

34. Fall, interview, 26 Mar. 1992.

35. I. Nemeth, "Strategy Set to Protect Seafood's Name," *Alaska Journal of Commerce* 13 (8 May 1989).

areas where oil was present in surface waters or on nearby shorelines. A "zero tolerance" policy was initiated, motivated in part by marketing concerns related to possible distribution of contaminated fish.<sup>36</sup> Under this policy, if oil was discovered on a single fish, the entire boatload would have to be discarded.<sup>37</sup> Many fishing areas within Prince William Sound, Cook Inlet, and the Kodiak area experienced season-long closures. Where fishing was permitted, each boatload of fish was inspected by ADEC as it was delivered to the processing plant.<sup>38</sup> In the meantime, part of NOAA's responsibility was to help monitor the movement of oil, and to forecast its possible intrusion into harvest areas.

"Zero tolerance" was viewed as a successful measure by most fishing industry spokespersons. Kim Elton of the Alaska Seafood Marketing Association observed that, "It would have been devastating to the marketing effort if any contaminated fish had slipped through, but it didn't." Manny Soares, manager of the state's seafood inspection program, added that, "Very little of that [inspected] salmon was tainted by oil from the *Exxon Valdez*." The contaminated fish that were found usually were the result of such shipboard accidents as a broken hydraulic line or spilled fuel, according to Soares. "It [*Exxon Valdez* contamination] was very, very slight," he stated.<sup>39</sup>

Normally, the first major season to open within the spill area is the herring fishery. Within Prince William Sound the entire herring season was closed during 1989, due to concentrations of oil in many of the harvest areas. Herring fishing was not permitted in the lower Cook Inlet area, and was also prohibited in thirty-four of the fifty-four management areas within the Kodiak region.<sup>40</sup> Overall, over \$6 million in losses in 1989 resulted from the Prince William Sound closure, and a net loss of about a tenth that amount occurred in western Alaska harvest zones.<sup>41</sup> During the previous four years the Prince William Sound herring harvest had amounted to 12–22 percent of the Alaskan state-wide total of commercial fishing revenues. Early projections calling for Prince William Sound herring sac-roe to provide approximately 16 percent of the 1989 Alaskan state total were not met when that fishery shut down on 3 April.<sup>42</sup>

Attention turned next to the halibut season. Halibut are an offshore bottomfish managed by the International Pacific Halibut Commission.<sup>43</sup> Landed halibut are also subject to state inspection standards. Working jointly with state and federal fish and

36. K. Holmes, "The Spill: Alaska, Oil, and the Future of the Fish Industry," *Meat & Poultry Journal* 35 (Oct. 1989): 22. The article observed that, "The program is helping Alaska [to] maintain its reputation for wholesome seafood, but it may also have put a lot of fishermen and processors in the poorhouse."

37. *Ibid.*

38. S. Looney (ADEC), reported (15 July 1992) that "2 or 3" Cordova based vessels were found (in 1989) to be carrying oil contaminated fish. In those cases the fish were ground and disposed of in compliance with EPA standards. The Exxon waste management report (1990) states that "only one boatload was clearly shown to have been contaminated by Exxon Valdez crude." A total of thirty-eight thousand pounds of fish were disposed of. In addition, according to another source, "several hundred" rockfish were reportedly killed by spilled oil.

39. D. Fosdick (AP), "State Continues Zero-Tolerance Policy on Oiled Fish," *Anchorage Daily News*, 10 June 1990.

40. State of Alaska Office of the Governor, "Exxon Valdez Oil Spill Information Packet," Sept. 1989, no. C241, FOSC Exxon Valdez Archive.

41. Hon. J. J. Gibbons (administrator), "Memorandum Explaining Preliminary Disposition of Claims of Fishermen and Those Who Claim Derivatively From Them, Exxon Valdez Claims of the Trans-Alaska Pipeline Liability Fund," Dec. 1991, 13.

42. State of Alaska Office of the Governor, "Exxon Valdez Oil Spill Information Packet," appendix.

43. D. Haanpaa (ADF&G), conversation record by Lt. Comdr. R. Gaunt, Anchorage, 14 July 1992, no. F727, FOSC Exxon Valdez Archive.

wildlife authorities, NOAA observers conducted a comprehensive survey of prime halibut fishing grounds, looking for indications of oil sheening so that areas where that occurred might be avoided by fishing vessels. Three days of overflights were conducted just before the initial harvest. During commercial fishing operations, no contaminated halibut, vessels, or fishing gear were reported.<sup>44</sup>

The commercial salmon season was scheduled to open in mid-May. Of concern prior to that date was the release of salmon fry from hatcheries. Because salmon fry feed on plankton, which blooms for only a limited period, timing is critical. It is essential, therefore, that mass fry releases take place within narrow "windows." Early in May, about 500 million fry were released, and reports seemed to indicate that the operation was a success, despite the presence of oil throughout the sound.<sup>45</sup>

The Alaska Department of Fish and Game closed salmon fishing areas in western Prince William Sound due to heavy concentrations of oil there. In northern and eastern portions of the Sound, it appeared that salmon fishing might be possible, but concerns were being voiced by the fishing community. Would oil move into previously unaffected areas, as a result of storms? Could fishing areas be contaminated by oil saturated popweed floating in the sound?<sup>46</sup> The National Oceanic and Atmospheric Administration tried to address such fears through the observation and charting of oil sheens. This information was then made available to fishermen through such sources as the ADF&G Salmon Task Force.<sup>47</sup>

The salmon season was opened in the northern sectors of Prince William Sound on schedule. Careful surveillance of fishing areas was necessary and at times portions of the area were temporarily closed when oil sheens were sighted. The Alaska Department of Environmental Conservation, ADF&G, and NOAA conducted daily overflights of the northern sound looking for sheens or encroaching rafts of contaminated popweed. The popweed problem never materialized in a significant way. Sheen samples gathered by NOAA proved frequently not to be the product of spilled Alaskan crude. They often consisted instead of refined petroleum products commonly used by fishing vessels during normal operations.<sup>48</sup> In the meantime, NOAA data and computer model projections of the spill were indicating that there was very little chance of movement of spilled crude into northern Prince William Sound.

The situation was different for western Alaska salmon fishermen. Most salmon fishing areas in the Kodiak region were completely closed, as were many within Cook

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44. ADF&G, *Fish and Game Bulletin* 11, no. 4 (June–July 1989).

45. Cutter Information Corporation, "More than 500 million salmon fry entered fouled waters this week," *Oil Spill Intelligence Report* 12 (4 May 1989): 2.

46. Popweed is a floating algae found in abundance on many Prince William Sound shorelines. It tends to loosen during storms, and form into mats which sometimes drift over extended distances. Popweed concerns resulted in a full blown recovery and washing operation which is discussed in chapter 13, "Waste Management."

47. J. Talbott (NOAA), conversation record by Lt. Comdr. R. Gaunt, 2 Apr. 1992, no. F798, FOSC Exxon Valdez Archive; and Haanpaa, conversation record, 14 July 1992. The task force was an ad hoc group which formed in 1989. It consisted of Prince William Sound fishermen, processors, and others, including ADF&G representatives. Its function was to disseminate information of general interest, to serve as a forum for discussion of Prince William Sound fishing issues, and to be a sounding board for consideration of impending policies. The group continued to function in 1992.

48. Talbott, interview, 2 Apr. 1992.

Inlet. Alternative arrangements (e.g., extending harvest periods in nonimpacted areas) were employed to compensate for lost fishing opportunities wherever possible.<sup>49</sup>

By the usual standards, 1989 was still a very productive fishing season. End-of-season estimates indicated a catch of 150 million salmon, at the time, the highest total on record. The total catch might have been even higher, according to Don Byron of ADF&G, had the *Exxon Valdez* oil spill not occurred. Even though the 1989 total catch within Prince William Sound substantially exceeded 1988 levels, it was not what had been expected. Fishermen in Prince William Sound caught about 50 percent fewer salmon than had been forecast. When combined with the sharply lower salmon market prices that developed during the season (driven downward apparently not by the spill, but by the size of the harvest), many fishermen were disappointed with the season's results.<sup>50</sup>

A study, commissioned by ASMI near the end of the 1989 season, provided a strong indication that the *Exxon Valdez* oil spill had not adversely affected seafood purchases among consumers in domestic and foreign markets.<sup>51</sup> American households appeared to have faith in testing programs designed to assure the safety of seafood products. Only small percentages of consumers in the French and British markets questioned the safety of Alaskan seafoods. Where reduced consumption had taken place, higher prices were far more likely to have been the cause. ASMI executive director, Merry Tuten, stated that she was "encouraged by the results of the surveys," and saw it as "one indicator of the success of our inspection and communication programs."<sup>52</sup>

#### LOSSES DURING THE 1989 FISHING SEASON

The total dollar loss to commercial fisheries during the 1989 season was estimated at \$109 million by Economists Incorporated (EI), an independent market survey agency engaged by the Trans-Alaska Pipeline Liability Fund. Exxon made compensation payments to members of the fishing community, tied to projected incomes and based on a formula called the "but for" factor. Often Exxon's payments were equal to, or in slight excess of, what would likely have been earned, "but for" the spill.<sup>53</sup> Almost 88 percent of all lost harvest value in 1989 was centered within the Kodiak and upper Cook Inlet salmon fisheries (table 18.2).<sup>54</sup>

49. Cutter Information Corporation, "Despite Bumper Salmon Harvest In Alaska, Fishermen are Still After Exxon," *Oil Spill Intelligence Report* 12 (28 Sept. 1989): 2. Although many areas were closed or restricted, the 1989 fishing season saw a record catch of 150 million salmon, a "bountiful," though disappointing in terms of prices, catch.

50. *Ibid.*

51. The Alaska Seafood Marketing Institute engaged the prominent advertising and research firm of Burston Marsteller to assess the long term impact of the spill for Alaska-produced seafoods. Burston Marsteller's previous clients included Johnson and Johnson in its Tylenol® problem, and Union Carbide following its chemical plant disaster in India.

52. ADEC, "Seafood Institute Conducts Survey," *Oil Spill Chronicle* 1 (15 Sept. 1989): 4.

53. Gibbons, 13.

54. Upper Cook Inlet was not directly impacted by floating oil, thus raising the question of why there was a loss of fishing revenues there. The reason is that salmon are migratory, and in the process of movement from the Gulf of Alaska, it had been feared that the traverse through contaminated waters might have resulted in exposure to oil. The closure was thus a precautionary one.

When individual damage claims for losses sustained as a result of the spill were totaled, there were 7,395 separate claims (table 18.3).<sup>55</sup> A factor that was considered when the validity of claims was weighed was that some of the claimants "earned substantial compensation for their participation in the spill cleanup." (Exxon and its contractor, VECO, in hiring people for work in the cleanup, gave preference to those who were otherwise unable to work because of the spill.) A consideration in determining eligibility for payments was whether the claimant would actually have participated in the fishing season, had circumstances been otherwise. Because substantial numbers of those holding permits do not actually fish, fishermen had to show a recent history of commercial fishing to be eligible.<sup>56</sup>

TABLE 18.2

Lost Dollar Value of 1989 Fishing Harvest

Species	1989 Lost Harvest Value	% of Total Loss
Lower Cook Inlet area shrimp	\$30,191	*
Sablefish (all areas)	\$59,173	*
Crab (all areas)	\$110,252	0.1
Lower Cook Inlet area herring	\$200,960	0.2
Prince William Sound area shrimp	\$336,684	0.3
Kodiak area herring	\$387,637	0.4
Lower Cook Inlet area salmon	\$965,134	0.8
Prince William Sound area salmon	\$2,145,075	2.0
Chignik area salmon	\$3,787,718	3.5
Prince William Sound area herring	\$6,388,142	5.8
Upper Cook Inlet area salmon	\$42,789,556	38.9
Kodiak area salmon	\$52,733,598	48.0
<b>Total (all areas)</b>	<b>\$109,934,120</b>	<b>100.00</b>

Source: Memorandum explaining preliminary disposition of claims of fishermen and those who claim derivity from them, *Exxon Valdez* claims of the Trans-Alaska Pipeline Liability Fund, 13.

\* indicates loss was less than 0.1%.

The spill had another disruptive influence on the fishing industry in Alaska. In areas where fishing or fish processing might have carried on as usual, there was often a shortage of labor. At the Seahawk Fishing Company in Valdez, for example, a call for more than two hundred workers (at \$7.00 per hour) produced only eight applicants.<sup>57</sup> When Exxon chartered 163 Kodiak fishing vessels for work in the cleanup, many of the more productive vessels in the area were lost to the 1989 harvest. As a result, an estimated two thousand cannery workers faced reduced work and lost wages.<sup>58</sup> Exxon paid cleanup help \$16.69 per hour, and fishing boats were contracted for as much as

55. Gibbons, 10.

56. *Ibid.*, 9.

57. R. Marquand, "Many of Alaska's Fish Emerge Unscathed by Oil Spill," *The Christian Science Monitor* (2 June 1989).

58. D. Parker, "No Season for Kodiak Salmon," *Alaska Fishermen's Journal* 12 (Sept. 1989): 17.

\$5,000 per day.<sup>59</sup> Workers and boat owners alike were drawn by the lure of greater wages and profits. In the words of one Kodiak laborer, "Who wants to work for \$8 an hour when you can make \$17 on the beach?"<sup>60</sup>

TABLE 18.3

Number of Claims Considered by Settlement Authorities in 1991

Claimant Type	Number of Pending Claims
Crab Crew Members	15
Misc. Saltwater Finfish Crew Members	30
Sablefish Crew Members	39
Crab Permit Holders	48
Sablefish Permit Holders	53
Shrimp Crew Members	68
Misc. Saltwater Finfish Permit Holders	79
Shrimp Permit Holders	95
Halibut Crew Members	105
Spotter Pilots	113
Boat Owners	130
Halibut Permit Holders	157
Herring Permit Holders	485
Herring Crew Members	511
Salmon Permit Holders	1,951
Salmon Crew Members	3,516
<b>Total Claims</b>	<b>7,395</b>

Source: Memorandum explaining preliminary disposition of claims of fishermen and those who claim derivivity from them. *Exxon Valdez* claims of the Trans-Alaska Pipeline Liability Fund, p. 10.

Note: All claims, except one, were based on alleged 1989 damages.

Processors reported that many of those who opted for service with shoreline cleanup crews included the dependable and experienced "regulars" upon whom they had depended in the past. Perhaps hardest hit were remote-site plants. In some, preparations for the 1989 season had begun very early, and things were in a state of readiness when the *Exxon Valdez* went aground. Food, supplies, equipment, and advance personnel had already been shipped to such plants, and when it became apparent that planned operations would be reduced, costly adjustments had to be made.<sup>61</sup>

In analyzing the sizable array of evidence regarding the economic effects of the *Exxon Valdez* spill in 1989, Economists Incorporated concluded that, "While not every piece of evidence points in the same direction, the great bulk of the evidence tends to support

59. R. Marquand. The standard pay rate for shoreline workers was \$16.69 per hour in 1989. That amount was raised to time-and-a-half when work days and weeks exceeded eight and forty hours respectively. Liberal amounts of overtime pay were common.

60. I. Nemeth, "Kodiak Being Ignored, Spill Going Unfought," *Alaska Journal of Commerce* 13 (29 May 1989).

61. K. Holmes, "Salmon Fishermen Suffer Most In Alaska," *Seafood International* 4 (Sept. 1989): 38.



the view that the *Exxon Valdez* oil spill had no net effect on Alaskan seafood prices in 1989.”<sup>62</sup> What then explains the substantial “losses” that were reported earlier in this section? Decreased opportunities to fish, compared to what had been expected, seems to be the most plausible explanation.

#### COMMERCIAL FISHING AFTER 1989

A strong concern in the Alaskan commercial fishing community was the prolonged impact of oil-contaminated spawning beds. Spawning had taken place in 1989 despite the presence of oil. However, fish are most vulnerable to the effects of oil contamination during early life stages. According to a 1991 report, the species most affected by the spill were those that inhabit, spawn, or transit the intertidal zone or shallow areas next to shore.<sup>63</sup>

Salmon, herring, and Dolly Varden are particularly vulnerable. Several species of coastal and offshore fish (pollock, halibut, sablefish, cod, yellowfin and flathead sole, and rockfish) were claimed by the federal trustees to display evidence of continuing exposure to petroleum hydrocarbons in areas affected by the spill. Such exposure does not necessarily lead to significant injury, however, since many species have the capability to “manage” the exposure without harm. Salmon in particular are reported to have the capacity to metabolize petroleum hydrocarbons, making the contaminants unlikely to be found within their edible tissues.<sup>64</sup> But the report noted that, based on 1990 data, it was premature to conclude that coastal and offshore species had *not* suffered lasting injury. The 1990 salmon season saw an all-time record harvest. The total of salmon caught was 154.8 million, narrowly exceeding the previous season’s record.<sup>65</sup> The news was not all good, however. The record catch was due primarily to strong runs of hatchery-produced salmon. Wild salmon production was said not to have kept pace with that of hatchery fish.

Court documents filed in the federal government’s case against Exxon suggested that sockeye salmon in particular may have been adversely affected through disruption of normal spawning patterns.<sup>66</sup> The commercial harvest of sockeye in the western Alaska area was sharply curtailed during 1989, thus resulting in an abnormal number of adult salmon returns to spawning streams. When spawning areas become crowded, there is often a poor return during future years, since more juvenile salmon are produced than can be supported by the habitat. Survival and growth rates for sockeye might, therefore, be lower than usual. Sockeye salmon were to be monitored during the 1992 and later spawning seasons.<sup>67</sup>

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62. “Executive Summary,” *Economists Incorporated* (1991) 7.

63. *United States of America v. Exxon Corporation et al.*, U.S. District Court, District of Alaska, filed 8 Apr. 1991, Civil Action no. A91-082. See attachment, “Summary of Effects of the Exxon Valdez Oil Spill on Natural Resources and Archaeological Resources,” Mar. 1991, 11.

64. *Ibid.*

65. C. Horton, “Statewide Glut Yields Low, Low Value,” *Alaska Fishermen’s Journal* 15 (Jan. 1992): 20.

66. A term often used in reference to the successful return to spawning areas is “escapement.”

67. *USA v. Exxon Corp. et al.*, filed 8 Apr. 1991. Attachment, 11.

Again, as in 1989, the state of Alaska imposed a “zero tolerance” policy for commercial catches. By early summer, several fisheries had been reopened, and though there were “several reports of suspected oil contamination,” each was investigated and found to be without foundation.<sup>68</sup>

## SPORT FISHING AND TOURISM

Concerns for the well being of Dolly Varden and cutthroat trout, two highly sought after sport fish species that depend on near-shore environments during part of their life cycles, rose due to the presence of high bile petroleum hydrocarbon metabolites in samples of these species, according to damage assessment studies released by the trustees in 1991. There were also said to be high adult mortality rates in areas where habitat was oil-contaminated.<sup>69</sup> Because ADF&G officials suspected damage to both species, a moratorium was declared for 1992 Dolly Varden and cutthroat trout within Prince William Sound waters. The respite was seen both as a period for further study, and for replenishments of stocks. In 1993, another one-year moratorium was requested by ADF&G officials, and approval was pending as the time of this writing.<sup>70</sup>

It is difficult to assess the overall effect of the spill on the Alaskan tourism-dependent economy, particularly within Prince William Sound. Commercial lodging facilities that normally would have serviced visiting sport fishermen instead filled rooms with those involved in the spill response, often at higher room rates. The governor’s office reported a 2–3 percent growth in the overall tourist industry for 1989, suggesting that visitors were not avoiding Alaska. There were some fears that there might be “long range damage to Alaska’s image as a tourist destination” as a result of the spill, but there is a lack of hard data to support that contention.<sup>71</sup>

State authorities were initially reluctant to release information related to sports fishing losses following the spill, which was regarded as litigation sensitive. A December 1992 report to the state’s attorney general office by economists Richard Carson and Michael Hanemann concluded that “lost recreation days” (124,185 according to the study) had resulted in an economic loss of \$31 million.<sup>72</sup> The result can be considered to be a highly uncertain estimate, however.

Sport fisheries did continue in Prince William Sound in 1989, subject to creel census monitoring by fishery biologists. Governor Cowper issued a statement which sought to calm fears that sport anglers would opt for other locales, fearing contamination of both the fishing areas and the catch: “The oil spill is a great tragedy, but fortunately its effect on sport fishing will be minimal. Our message is: Don’t cancel your plans. We expect sport fishing to be as good this year as it’s ever been.”<sup>73</sup>

68. Fosdick, 10 June 1990.

69. *USA v. Exxon Corp. et al.*, filed 8 Apr. 1991. Attachment, 11.

70. K. Hepler (ADF&G), conversation record by Lt. Comdr. R. Gaunt, 29 Apr. 1993, no. F802, FOSSC Exxon Valdez Archive.

71. State of Alaska Office of the Governor, “Oil Spill Information Packet,” 24.

72. R. T. Carson and W. M. Hanemann, “A Preliminary Economic Analysis of Recreational Fishing Losses Related to the Exxon Valdez Oil Spill” (a report to the Attorney General of the state of Alaska, 18 Dec. 1992), no. F799, FOSSC Exxon Valdez Archive, 9.

73. “Effects on People and Economy,” *Alaska Fish and Game Journal* 21 (July–Aug. 1989): 34–35.

## AIR QUALITY CONCERNS

Public health concerns led to an extremely cautious attitude toward the burning of floating crude oil or oiled debris. In several cases, emissions from fires, or proposed fires, became issues.<sup>74</sup> Very early in the spill, the decision not to employ in situ burning of spilled oil near the site of the vessel was greatly influenced by air emissions considerations. Smoke from in situ operations, it was feared, would descend upon the nearby village of Tatitlek, causing discomfort or respiratory problems for residents and perhaps even poisoning the local environment.<sup>75</sup> Ultimately, no large-scale in situ burning took place, and the question of what might or might not happen to villagers was avoided. It was a signal, however, that the fear of airborne hydrocarbons might be raised whenever questions involving combustion arose.

Potential toxic effects associated with burning of oiled debris dogged Exxon's waste-burn barge program through much of the 1989 cleanup season. As noted in the Waste Management section of this report, a costly attempt to develop capabilities to burn oiled waste products in specially constructed incinerators was eventually abandoned. At the point where Exxon officials finally gave up the project, they were being confronted by frightened residents of a small Kodiak-area village who expressed concerns over toxic incinerator smoke.<sup>76</sup>

A limited amount of oiled refuse burning was done at Valdez, both at the Dayville Road facility, and at the Alyeska terminal. Dayville Road (where three relatively small hospital incinerators were employed) was viewed by environmentalists with some suspicion as it was being developed. The threat was the perceived danger associated with air emissions.<sup>77</sup> In still another case, the matter of having fires on shorelines to dispose of oil-saturated logs raised more questions about possible negative effects upon air quality. It was only after carefully monitored tests, and with several prescribed safety measures in place, that shoreline burning was permitted by state of Alaska authorities.

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74. See also chapter 13, "Waste Management."

75. CWO M. Delozier, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, Valdez, 25 July 1991, no. F174, FOSC Exxon Valdez Archive.

76. Rear Adm. D. E. Ciancaglini and Vice Adm. C. E. Robbins, interview by Dr. T. Leschine (FOSC staff), Comdr. D. Maguire, Lt. Comdr. R. Gaunt, Anchorage, 10 Sept. 1991, no. F106, tape, FOSC Exxon Valdez Archive.

77. Some environmentalists contended that placing three smaller incinerators at the site, with a combined burning capacity in excess of the amount that would require an incinerator permit had the setup consisted of one larger burner, frustrated the protective purposes of state Clean Air Act regulations.

## COMMUNITY MENTAL HEALTH IMPACTS

Mental health professionals expressed concerns about possible psychological impacts of the spill, particularly in the form of long term psychological effects among the Native communities that were dependent upon the marine environment for food and well being. In 1989, local mental health centers began making long-term plans to cope with anticipated increased stress, depression, and alcoholism within Native communities.<sup>78</sup>

A Native community leader expressed his feelings of helplessness, confusion, fear, and despair in an article that appeared in an Anchorage paper in August of 1989. The Native elder told of walking on lifeless shorelines, observing dead birds and sea otters where the spring had normally provided an abundance of fresh salmon. He went on to say, "We take the jobs [on the cleanup], we take the orders." Native people, however:

Aren't used to being bossed around. We don't like it. We start fighting. We lose trust for each other. We lose control of our daily life. Our people get sick,...angry, and afraid. They cannot do all the activities of gathering food and preparing for winter. They cannot teach the young ones the Native way. We have lived through much devastation. Our villages were almost destroyed by chicken pox and tuberculosis. We fight the battles of alcohol and drug abuse. And we survive.<sup>79</sup>

The Native elder's words serve to indicate not only the levels of stress and apprehension that existed in villages affected by the spill, but also suggest a positive resolve that would assist in the process of healing.

Though the problems were of a different magnitude, the atmosphere created by the spill took a toll on other communities in the area as well. At Valdez, the long and strenuous days that were being experienced by many residents resulted in "marital problems, depression, and symptomatic disorders," according to Bob Donald, a psychologist at the Valdez counseling center. Donald foresaw needs for the long-term provision of mental health services for the community.<sup>80</sup> In Cordova, the social fabric of the community was similarly disrupted. A number of marriage breakups were said to have been influenced by the spill. Friends who normally did things together could not find time for one another in 1989. Many child-parent relationships were strained, it was reported.<sup>81</sup>

Governor Cowper's office reported that other communities in the area affected by the spill had shown signs of stress. In Homer, mental health admissions rose from an average of eighteen per month to forty per month during summer, 1989. Demand for substance abuse treatment rose by 200 percent in that same community. At Kodiak, mental health admissions rose by about sixteen per month, to a level of fifty-two persons. The governor worried that winter, with prolonged darkness and the immobility that comes with deep snowfalls in the area, would make the mental health situation worse.<sup>82</sup>

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78. E. Walz, "Human Health: One More Victim of Exxon's Spill," *Not Man Apart* 19 (May 1989).

79. W. Meganack, Sr., "Coping With the Time When the Water Died," *Anchorage Daily News*, 5 Aug. 1989.

80. Walz, May 1989.

81. S. A. Jaeger, "Social Impacts of Spill Raise More Concern than Funding," *Cordova Times*, 8 Mar. 1990, sec. A.

82. State of Alaska Office of the Governor, "Oil Spill Information Packet," 23.

There was little done to assess the social impacts of the spill, according to Christopher Dyer of the University of South Alabama. Dyer, who took part in an analysis of psychological stress within the community of Cordova, stated that "funding to study social impacts was often not available; what was available was hardly adequate." Efforts aimed at conducting human impact factors were neither coordinated nor centrally organized. "We were very fortunate to get what we do have," he reported.<sup>83</sup>

A Valdez motel owner told of crowded conditions. It was common for five or six workers to be lodged in space that was designed to accommodate half that number. "They were here away from wives and family, and they eventually became burned out. They aren't all bad, but after a while, dealing with them gets to be a grind," he reported. It was a relief for Valdez residents when spill workers finally left the community. "I got tired of...guys in orange suits running around with radios all the time," declared one Valdez resident.<sup>84</sup>

A refrain commonly heard among observers of psychological and social impacts of the spill was that Alaskans would make the necessary adjustments to survive the crisis. Communities came back following the disastrous earthquake in 1964. They had previously survived economic crisis (the closing of copper mines in Cordova, for example) and they figured to survive this crisis, according to those who studied the problem. "Cordova's tough—it's a tough town and it will survive" reported Alaskan anthropologist James Payne. The spring of 1990 brought similar indications that things looked less bleak in Valdez. It appeared that persons there were prepared to pick up their normal lives. Native villages seemed to be coming through the difficulties as well. A year after the spill it was observed that "the bonds of family and clan relationships are still intact and healthy" in Native villages. That would help preserve the integrity of Native communities, according to one anthropological expert.<sup>85</sup>

Nearly three years after the spill, Valdez Mental Health Clinic spokesman Bob Donald observed that there was still evidence of post-traumatic stress within the communities of Valdez and Cordova. A study in 1989–90 had concluded that the mental health effects of the spill would continue for three to five years.<sup>86</sup> Those conclusions were proving to be accurate, he felt. Post-spill trauma continues to manifest itself in marriage relationships, higher divorce rates, children's problems, and general anxiety levels, according to the study. School officials have observed increases in truancy and behavioral problems, grade declines, "acting out" incidents, and drug use among students.<sup>87</sup> School enrollment in Valdez jumped 14 percent during the 1988–89 school year, a factor which was itself disruptive and destabilizing.<sup>88</sup>

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83. Jaeger, 8 Mar. 1990.

84. J. Houch, "Valdez Residents Have Mixed Feelings on Spill," *The Anchorage Times*, 24 Mar. 1990.

85. Jaeger, 8 Mar. 1990.

86. Donald reported that the study dealt with Valdez and Cordova only, and did not consider Native villages. In his view Native communities "wanted to be left alone," since they had already been "questioned over and over."

87. B. Donald (Valdez Mental Health Clinic), interview by Lt. Comdr. R. Gaunt, 12 Mar. 1992, no. F725, notes, FOSC Exxon Valdez Archive.

88. S. J. Suddock, "Valdez Will Never, Ever Be the Same," *Alaska Journal of Commerce* 13 (25 Sept. 1989).

Donald also lamented that social impact issues seem to have been neglected following the spill, despite the amount of money that was spent on studies of other impacts. He reported having a very hard time getting any money at all. Donald also reported that the increased case loads that developed during the post spill period have had to be absorbed by existing staff.<sup>89</sup>

It is clear that many close to the situation believe that the spill had and will continue to have a significant effect upon the mental health climate in the affected area.

## SUMMARY

As the Coast Guard concluded its involvement in the spill response in late spring, 1992, there were signs that fish populations were abundant and healthy in 1992. The Alaskan fishing industry faced numerous uncertainties that had nothing to do with the spill. Competition from foreign fishermen, principally those based in Japan and emerging competition from Chile, New Zealand, Scotland, and Norway, was interpreted by some as an indication that the entire industry might be in the early stages of significant change.<sup>90</sup> Relatively little attention was still being devoted to questions related to the *Exxon Valdez* spill.<sup>91</sup>

Less tangibly, even in 1992 some communities may not yet have put the spill behind them emotionally. Former state OSC Ernie Piper felt that things hadn't yet returned to normal in Cordova, for example, a place that was hard hit emotionally by the spill.<sup>92</sup> Anger continued, in part perhaps because of factors that go well beyond the damage and disruption caused by the spill alone. But the worst fears, that some small Native communities might disappear all together as a result of the spill, have not been realized.

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89. Donald, interview, 12 Mar. 1992.

90. B. King, "Economists Say Get Real," *Alaska Fishermen's Journal* 15 (July 1992): 14.

91. Based upon survey of a regular column "Market Report," produced in a small items format in the *Alaska Fishermen's Journal*, June and July 1992 editions.

92. E. Piper (ADEC), interview by Dr. T. Leschine (FOSC staff) and Lt. Comdr. R. Gaunt, Anchorage, 15 July 1992, no. F663, tape, FOSSC Exxon Valdez Archive.



## CHAPTER 19. FEDERAL INTERGOVERNMENTAL RELATIONS

### OVERVIEW

Compliance with the federal, state, and local laws, regulations, policies, and agency actions that are designed to protect citizens and the environment represents one of the most significant challenges to the Federal On Scene Coordinator (FOSC). The FOSC navigated, without reliable legal aids, a tangled web of consultations, concurrences, permits, conditions, constraints, windows of opportunity, opinions, demands, and sensibilities. Against this backdrop the FOSC also had to contend with governmental entities with a variety of underlying motives and perspectives, and with others determined to be heard. This chapter focuses on the organizational relationships that developed between the FOSC and various federal agencies that either participated in the response or were called on to support the response in some way.

Underlying issues that help frame this chapter include: (a) the role of the president in bringing resources to the response; (b) the willingness of agencies to exercise “flexibility” in the enforcement of laws and regulations in order to facilitate the cleanup effort; and (c) the requirement that the FOSC respect and support the role of the responsible party, thus ensuring that other agencies, likewise respect that role and not try to “punish” the responsible party by withholding necessary approvals.

The National Contingency Plan (NCP) envisions cooperative relationships within and among the federal agencies responding to an incident. Likewise, both contingency plans and agency personnel presuppose a range of decision making beyond which higher authorities will get involved. This chapter examines what happened within certain federal agencies when both the NCP and contingency plans were overwhelmed by events.

The roles played by the U.S. Department of Defense (DOD), National Oceanic and Atmospheric Administration (NOAA), the U.S. Customs Service, and the National Park Service (NPS) are examined in this chapter. In each case, the role played was expanded significantly beyond that envisioned in the NCP or in prior contingency planning. Generally this expanded involvement greatly facilitated the work of the FOSC, particularly in the case of DOD and NOAA. But unanticipated difficulties arose from interactions with other federal agencies, exemplified by interactions with the U.S. Customs Service and National Park Service. All situations speak to needs that should be addressed through changes in the NCP or in related contingency planning. Where expanded assistance from outside agencies facilitated the response, measures should be taken to assure that such support can be provided as needed in the future. Where problems of conflicting agency roles and missions arose, efforts are necessary to assure that in the future, similar conflict is avoided through attention to the underlying issues in contingency plans and in agency authorities.



## THE ROLE OF THE DEPARTMENT OF DEFENSE IN THE RESPONSE

Although much has been done since the passage of the Oil Pollution Act of 1990 (OPA 1990) to enhance logistical preparedness in the private sector for oil spill cleanup, future spills of similar scope may well, like the *Exxon Valdez* spill, require the full logistic participation of the DOD.

While DOD is required to designate the on scene coordinator/remedial project manager (OSC/RPM) for discharges from its own vessels or facilities, its response with respect to other federal agencies is discretionary.<sup>1</sup> The U.S. Army Corps of Engineers can clear and maintain channels; design, construct, and repair structures; maintain hydroelectric generators; and write and administer contracts.<sup>2</sup> The U.S. Navy can provide salvage, vessel damage control, diving and pollution control, containment and removal services, and equipment.<sup>3</sup> The U.S. Army can provide various military facilities, vehicles, equipment, and, in some cases, aircraft and construction equipment.<sup>4</sup>

The foregoing does little to explain the actual DOD effort expended in the *Exxon Valdez* spill, however. No DOD activity directly supporting a discharger is in fact authorized. The U.S. Air Force (USAF) is not incorporated at all, yet provided an extensive airlift, communications, and command center operation; and coordinated, through Joint Task Force-Alaska, the entire DOD response. The U.S. Army Corps of Engineers provided two large dredges, but to skim oil and provide command facilities, not to dredge. The U.S. Navy extensively fulfilled its planned functions of providing salvage and cleanup vessels, boom, equipment, and people, but also chartered to Exxon landing craft and six amphibious assault ships in rotation for worker berthing and as command vessels.

This last instance serves as well as any to exemplify the impact of a spill of national significance on even such a vast and versatile establishment as the DOD. The military is nothing, if not superbly equipped, organized, and ready for swift deployment anywhere. Yet finding ships suitable to this deployment was not easy. Naval vessels are designed for specific military purposes, seldom well adapted to extensive civil missions such as this, and inextricably committed to long-term national defense readiness schedules. This deployment seriously dislocated readiness scheduling and operations planning for the ships used and their active amphibious group command. Ship evaluations and crew training suffered, as did crew morale owing to prolonged isolation with limited liberty and coping with embarked civilians doing the dirtiest, demanding work imaginable, but not subject to military discipline.<sup>5</sup> Even the chartering of beach craft was new to people not in the business of fixing vessel charters.<sup>6</sup> This performance represents the exemplary flexibility and emergency response

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1. 40 CFR 300.6; 300.23 (b)(3), (d)(3); and 300.33 (a) and (b)(8).

2. 40 CFR 300.23 (b)(3); ARCP 302 (D)(4)(b).

3. 40 CFR 300.23 (b)(3); 300.37 (b)(2); Alaska Regional Contingency Plan (ARCP) 302 (D)(4)(c).

4. Alaska Regional Contingency Plan (ARCP) 302 (D)(4)(a).

5. W. S. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 1990, no. W1325, FOSSC Exxon Valdez Archive, 41-42 and 46-48. This study is an extended account of DOD participation.

6. Ibid., Col. M. Plumb (USAF), interview by Lt. Comdr. R. Gaunt, Anchorage, 16-17 June 1992, no. F671, tape, FOSSC Exxon Valdez Archive.

capability of the DOD, from senior levels to major incident-free professionalism between decks.<sup>7</sup>

Contingency planning did not encompass a concerted DOD-wide support effort, or a DOD support coordinator to orchestrate such a response. Rather, discrete DOD components have individual regional response team (RRT) representation and are separately authorized to provide certain assistance deriving from their special functions. Logistics and communications on the scale required and provided in this response are not among those functions. Alaskan topography largely dictates air transportation, yet Alaskan contingency planning did (and does) not include the U.S. Air Force. Nevertheless, the Alaskan Air Command (AAC), that had already provided informal assistance, was in full logistical support as soon as the president designated the DOD to assist. The FOSC could not have enjoyed better support; conversely, the U.S. Coast Guard aided the U.S. Air Force in the unfamiliar terrain of accounting for the cost of that support for reimbursement. And jointly, the U.S. Air Force, the U.S. Army, the U.S. Navy, and the FOSC staffed the Military Operations Center established by the Alaskan Air Command.

The pre-spill relationships and contingency plans that existed between the DOD and Coast Guard rapidly evolved with the onset of the *Exxon Valdez* oil spill. However, the organizational relations anticipated in the contingency plans limited DOD's participation. This condition hampered DOD's ability to bring its full range of capabilities to bear on the problems at hand. This in part prompted the presidential establishment of a DOD spill response organization that could fully involve the resources of the department in assisting the FOSC and Exxon.

While DOD oil spill contingency planning was set out in the NCP and such regional plans as the Alaska Regional Contingency Plan (ARCP), oil spill response was not part of its general civilian assistance planning. The Joint Chiefs of Staff (JCS) had in 1975 established a Joint Task Force-Alaska (JTF-AK) under the command of the commanding general, Alaskan Air Command, to coordinate response to hostilities, national disasters, or emergencies. The JTF-AK had a 1983 operations plan for, and titled, Military Assistance to Civic Authorities. Neither the JTF-AK nor its plan was used directly in the *Exxon Valdez* response. The JTF-AK was not activated, because to do so would inappropriately involve the JCS in civilian matters. The existing directorate of military support (DOMS), a U.S. Army command, was deemed the more appropriate chain of command. The JTF-AK operations plan was not used directly, although it was used for guidance,<sup>8</sup> not only because the JTF-AK was not activated, but also because it anticipated assistance to the Federal Emergency Management Agency,<sup>9</sup> and because oil spills were expressly excluded as reason to activate the JTF-AK.<sup>10</sup>

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7. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 47.

8. *Ibid.*, 7 and 15–16. Although regularly exercised, JTF-AK had not been mobilized for real-world events before the *Exxon Valdez* oil spill.

9. *Ibid.* As the DOD's actual response demonstrated, this formal fact would not impede action.

10. *Ibid.*, 17. Thus closing the circle with which this paragraph opened.

The lack of standing plans proved to be of little consequence. The DOD made ready specific *Exxon Valdez* response plans, which it executed immediately upon presidential authorization. Instead of activating the JTF-AK, the secretary of defense designated the secretary of the army as the executive agent to plan, coordinate, and manage all DOD support,<sup>11</sup> and established a special Alaska Oil Spill Task Force (AOS-TF).<sup>12</sup> Lt. Gen. McInerney, commanding general, Alaskan Air Command, was designated oil spill cleanup Defense Senior Representative (DSR) and commander, AOS-TF. Federal On Scene Coordinator requests exceeding AAC capabilities were to be forwarded to DOMS. A DOMS Oil Spill Task Force (DOMS-TF) was activated in the Army Operations Center in the Pentagon at 1330, 6 April, to operate on a twenty-four hour basis, with a lengthy set of major tasks to begin and a coordinating assessment team. The Coast Guard–DOD relationships began here. The DOMS-TF, at its initial 6 April coordination meeting, was briefed by the Coast Guard on the spill situation, the idea of DOD support, and an initial estimate of the support needed.<sup>13</sup>

Although the defense establishment dwarfs the Coast Guard, and more so an FOSC, the fact of three-star rank in command as both DSR and FOSC proved to be a firm foundation for the relationship that developed between the two organizations.<sup>14</sup> Planning in light of this experience should obviate the need for such situational parity of rank in future spill of national significance.

Early DOD action in Alaska served as a preface to the presidentially authorized DOD-FOSC relationship.<sup>15</sup> The day after the spill, on Saturday, 25 March, U.S. Army and U.S. Air Force JTF-AK members convened to review procedures and responsibilities in anticipation of being called upon for response. Their review of outdated directives concluded that the normal U.S. Army natural disaster response function had been delegated in Alaska to the AAC, a fairly accurate prediction of dispositions later made. They formed a preliminary crisis-action team which then went on standby, awaiting declaration of a national emergency or an order to respond.<sup>16</sup> Until that order was issued, relations consisted of observing those courtesies customarily extended to transiting senior civil and military persons.<sup>17</sup>

Formal AOS-TF-FOSC relations began after the presidential press conference on 7 April. The director of military support had alerted the commanding general, AAC, of impending military involvement on 5 April; the latter had been designated DSR on

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11. Maj. Gen. J. D. Smith (director of military support), memorandum to secretary of the army, 6 Apr. 1989, no. C2433, FOSC Exxon Valdez Archive.

12. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 7. Despite the formal distinction between Joint Task Force Alaska and the Alaska Oil Spill Task Force, in practice there seems not to have been much effort to keep the distinction between the two organizations clear.

13. Smith, memorandum to secretary of the army, 6 Apr. 1989.

14. Vice Adm. C. E. Robbins, interview by Lt. Comdr. R. Gaunt, Washington, D. C., 29 Aug. 1991, no. F107, tape; and Lt. Gen. T. McInerney (USAF), interview by Lt. Comdr. R. Gaunt, Anchorage, 15 June 1992, no. F668, tape, FOSC Exxon Valdez Archive. That the two three-star admirals (Robbins and McInerney) had previously worked together facilitated the working relationship, perhaps to a critical degree.

15. This account is of agency relations, hence other military support which also began as early as 25 March, such as U.S. Navy salvage and skimming support under the NCP, or by the Alaska National Guard and Air National Guard (see Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 11–12) is treated elsewhere in this report.

16. Plumb, interview, 16–17 June 1992. This seems to have been without reference to any U.S. Army RRT participation.

17. McInerney, interview, 15 June 1992.

6 April. After watching the presidential press conference on the morning of 7 April, the commanding general went to Valdez to reconnoiter and to confer with the FOSC, having recalled his chief of staff and director for operations from Atlanta, Georgia. At that point it was determined that Exxon would continue to clean up.<sup>18</sup> The commanding general evaluated how the DOD could best support the FOSC, and reinforce the weaknesses of Exxon; for all Exxon's astonishing procurement ability, Exxon was judged by some to lack the organization and logistics sense that the situation demanded.<sup>19</sup> With this beginning, DOD support of the cleanup became of the highest order. The commanding general, as the DOD's point of contact for the FOSC, made the necessary happen, and the two "three-stars" established a productive and excellent working relationship.<sup>20</sup>

Staff relations of the same high order followed. Upon recall, the AAC director for operations returned to Anchorage through the Pentagon, having directed his deputy to activate the standby crisis action team on a twenty-four hour basis. At the Pentagon, the AAC would respond under the secretary of the army through the DOMS-TF, using AAC assets, informing DOMS-TF of these and forwarding to DOMS-TF any FOSC requests exceeding AAC capabilities.<sup>21</sup> The DSR staffed the spill-specific AOS-TF with the standing JTF-AK staff, a skeleton requiring augmentation from the Sixth Infantry Division and the AAC. The AAC in two days stripped and rehabilitated a former command post and set up a joint Crisis Action Center and Military Operations Center. Thus began effective DOD-FOSC response relations.<sup>22</sup>

The organization of this crisis-action and operations center was expedited by the happenstance that it was set up by an officer who was AAC director for operations, but who also had come to that job from three years of experience with crisis management. Adapting such plans as there were, he drew on that crisis management experience, assembling in the one-room center sufficiently senior representatives of the DOD components and of the Coast Guard to facilitate response and access to superiors. Activity in the center was intense. The director for operations worked twelve-to-fourteen-hour days, seven days a week, up to 4 July, as did all involved. The two week delay in the presidential authorization caused a "catch up" situation.<sup>23</sup>

One of the first tasks was assisting Exxon in organizing, and an example of a major time consuming effort was obtaining and surveying M-boats for charter to Exxon. Throughout, the approach was to make the necessary happen, and to work out the funding later. By mid-July most crises had been resolved, a more routine management prevailed, the managers went on telephone recall rather than twenty-four-hour attendance, and the services wanted their people back. The logistics function was

18. Ibid., Plumb, interview, 16–17 June 1992; "Alaska Oil Spill Top Concern at Bush's Press Briefing," *Congressional Quarterly* (8 Apr. 1989): 777.

19. McNerney, interview, 15 June 1992; Rear Adm. E. Nelson, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, Lt. T. Staats, Anchorage, 6 Aug. 1991, no. F110, tape; and Nelson, personal notes to the office of Sen. T. Stevens, no. C567 FOSC Exxon Valdez Archive.

20. Robbins interview, 29 Aug. 1991; and McNerney, interview, 15 June 1992.

21. Plumb, interview, 16–17 June 1992; and Smith, memorandum to secretary of the army, 6 Apr. 1989.

22. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 7, 9, 17, 21, 24–26; and Plumb, interview, 16–17 June 1992. Again, the Sixth Infantry Division seems not to have acted in its RRT capacity.

23. McNerney, interview, 15 June 1992; and Plumb, interview, 16–17 June 1992.

suspended for the winter, and in 1990 logistics were supplied in the course of business.<sup>24</sup> Still, the commanding general and the AOS-TF made the necessary happen.<sup>25</sup>

The FOSC-DOD support organization relations were close and constant.<sup>26</sup> The emergency effort strengthened the working relationship between the DSR and the FOSC. This foundation in turn facilitated the operation of the crisis-action and operations center. From the outset, the Coast Guard worked closely with the AAC director for operations to orient his activities to oil spill response and funding. There was reciprocal staffing at the DOD operations center in Anchorage and the FOSC operations center in Valdez. As the crisis management function receded in mid-July 1989, the U.S. Navy and FOSC representatives at the Anchorage center stayed in twenty-four hour operation, with the Coast Guard heavily represented on the night watches.<sup>27</sup> The DOMS connection worked well and proved itself for future use. Similarly, the military public information organization worked well to augment Coast Guard needs at the outset, insulated the operations center from the press, and would be an appropriate resource in future major spills, pending Coast Guard buildup.<sup>28</sup>

In the traumatic early days of this spill, the administration actively deliberated executive branch alternatives to the FWPCA-NCP legislative design, most notably and visibly including troops for on-the-ground cleanup duty.<sup>29</sup> The reasons against such a use of troops were and are numerous and cogent; any one would more than sufficiently counsel against the notion.<sup>30</sup> Nevertheless, the use of troops was seriously considered, not merely as a sop for public pacification.<sup>31</sup> The president publicly announced that an unstated number of ground troops would directly participate in the cleanup.<sup>32</sup> Administration sources were reported the next day to have put the number in the thousands.<sup>33</sup> Rumors flew as high as five thousand.<sup>34</sup> This was not mere rumor. The AOSC for Prince William Sound, between 1 and 5 April, before the DOD mobilized, had

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24. Plumb, interview, 16–17 June 1992. The operations side maintained twenty-four-hour Navy and Coast Guard coverage.

25. Rear Adm. D. Ciancaglini, interview by Dr. T. Leschine (FOSC staff), Anchorage, 16 July 1991, no. F172, FOSC Exxon Valdez Archive.

26. Capt. J. Crowe, Jr., conversation record with Lt. Comdr. C. Rapalas, 31 May 1989, no. C412, FOSC Exxon Valdez Archive. The best is never quite perfect. There was a takeover coup attempt by U.S. Air Force and U.S. Navy forces upon the Coast Guard air facility at Cordova, swiftly put down. There was also command disagreement about stationing rescue helicopters, the DSR considering these necessary forward planning, although needed also in Panama, and the FOSC determining these to be not certifiable to the pollution fund. This was the only real problem to arise in the relationship, a pretty clean record (McInerney, interview, 15 June 1992; Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 50; Plumb, interview, 16–17 June 1992; and Robbins, interview, 29 Aug. 1991).

27. McInerney, interview, 15 June 1992; Plumb, interview, 16–17 June 1992; and Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 20.

28. McInerney, interview, 15 June 1992; and Plumb, interview, 16–17 June 1992.

29. Hanable, 14–15.

30. Comdr. D. Rome, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. Comdr. H. Young, 22 Aug. 1991, no. F109, tape, FOSC Exxon Valdez Archive; Robbins, interview, 29 Aug. 1991; McInerney, interview, 15 June 1992; and Plumb, interview, 16–17 June 1992. Whether any of these reasons mattered in the apparent decision not to send troops as announced is known only at levels above, and not particularly material to this report.

31. Robbins, interview, 29 Aug. 1991; and Rome, interview, 22 Aug. 1991.

32. "Alaska Oil Spill Top Concern at Bush's Press Briefing," 777. Fifteen hundred troops had been recommended (Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 14).

33. M. Dowd, "Bush Orders Troops To Clean Up Oil," *The New York Times*, 8 Apr. 1989, 8. Worldwide press interest in the misconception that troops would be used, remained high at least through 10 April (USCG Pollution Report O 102217Z April 1989 [PWS Polrep 36], sec. [1][J]).

34. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 14.

the nearly insuperable task of finding bivouac for five thousand troops on lands whose managers were very concerned about such an impact.<sup>35</sup>

While troops were not detailed to wipe rocks, the DOD doubted Exxon's ability to manage the cleanup successfully. It therefore, during the last week of April, prepared a detailed contingency plan for the military takeover of oil spill cleanup management, one that would not relieve Exxon of financial responsibility.<sup>36</sup> This may underlie the thought held by the senior DOD support officers in Alaska that, whether or not troops were sent, and beyond logistics and contract procurement, the DOD might supply the FOSC for non-DOD spills.<sup>37</sup> It appears that a spill of national significance cannot be managed without a level of logistics support of the order provided by the military here.

### FEDERAL AGENCIES MORE GENERALLY

Most agencies participated both in their planned RRT capacities and through ad hoc arrangements specific to this response. The RRT arrangement *per se* proved ill-suited to facilitating the immediate expert support demanded to fight this spill effectively. The RRT's time and information requirements showed it to be better suited to longer-term projects allowing time for reflection and deliberation. In the first few days, the RRT did respond within hours to concur in dispersant and burning tests on the slick, but this early spurt of momentum was not maintained.<sup>38</sup>

Over the longer haul, however, the RRT did not facilitate. It proved to be slow, deliberative, reluctant to recommend or to act, and sometimes needed high-level motivation.<sup>39</sup> Some agencies could not sufficiently divorce themselves from their regulatory purposes to accommodate the RRT's facilitative purpose; a problem exacerbated by the fact that for some decisions, such as those involving the use of chemicals, these same agencies were by law more equal than other RRT members.<sup>40</sup> The FOSC, therefore, organized such on scene spill-specific committees as the ISCC, described elsewhere in this report, to provide the requisite expedited recommendations. One interesting lesson taught by the committees-at-work is that the same RRT agencies, when faced directly with the gritty task of on scene response, often wore down in time and under pressure, and went from being parochial in their interests to being collegial in finding solutions to common problems.<sup>41</sup> Great credit for this development is due to NOAA, which is discussed next.

35. Rome, interview, 22 Aug. 1991; and Comdr. D. Rome, memorandum to district commander, 5 Apr. 1989, no. C614, FOSC Exxon Valdez Archive.

36. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill: A Special Historical Study," 22-23.

37. McInerney, interview, 15 June 1992; and Plumb, interview, 16-17 June 1992.

38. Rome, interview, 22 Aug. 1991. Even so, the state found time to impose disproportionately onerous conditions on burning.

39. Vice Adm. C. Robbins and Rear Adm. D. Ciancaglini, interview by Dr. T. Leschine (FOSC staff), Comdr. D. Maguire, Lt. Comdr. R. Gaunt, Anchorage, 10 Sept. 1991, no. F106, tape; Capt. D. Zawadzki, interview by Dr. T. Leschine, A. van Emmerik (FOSC staff), and Lt. Comdr. R. Gaunt, Anchorage, 21 Feb. 1992, no. F214, tape, FOSC Exxon Valdez Archive; and Rome, interview, 22 Aug. 1991.

40. Capt. D. Bodron, interview by Lt. Comdr. R. Gaunt and Dr. T. Leschine (FOSC staff), Anchorage, 6 Mar. 1992, no. F673, tape, FOSC Exxon Valdez Archive.

41. Robbins and Ciancaglini, interview, 10 Sept. 1991.

## THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

The National Oceanic and Atmospheric Administration (NOAA) was the linchpin of FOSC agency support. Its advice was prompt and usually invaluable, its chairs made the ad hoc committees work, and its energies seemingly never flagged.

The National Oceanic and Atmospheric Administration fulfilled its NCP-designated function to provide scientific support coordinators (SSCs) to the FOSC with distinction.<sup>42</sup> The SSCs and scientific backup are provided through NOAA's Hazardous Materials Response Branch, which responded immediately. The SSC in Anchorage was called the morning of the spill and was in Valdez within hours. By that evening a six-member hazardous materials response team and helicopter were at the FOSC's disposal in Valdez. Oil trajectory, tide, weather, and wind information were reported to the FOSC within the first twenty-four hours after the spill. Routine daily spill-tracking overflights began on 26 March.<sup>43</sup>

For more than six months in 1989, over 80 percent of NOAA's Hazardous Materials Response Branch staff was committed to this spill, with severe setbacks to other pressing business. This amounted to some thirty people, with about fifteen serving at a time in Valdez, Seward, Homer, and Kodiak. To remedy this impact, NOAA proposed a specially hired staff of twenty for 1990.<sup>44</sup> This heavy staffing was vital to the FOSC. NOAA's senior staff tried to maintain tightly controlled, focused scientific committee meetings to give the FOSC recommendations the same day a question was posed, however late in the day.<sup>45</sup>

It must be said that this invaluable quality of assistance was not always given by SSCs in Seward, Homer, and Kodiak. Turnover there was high and some SSCs were individually unsatisfactory.<sup>46</sup> This shortcoming had several contributing factors. Contingency planning designated the captain of the port (COTP) of spill areas as FOSC. When the oil spread out of Prince William Sound into the Gulf of Alaska, it soon spread from the COTP Valdez area into the designated COTP Anchorage area. Although the division was quickly consolidated, Exxon was initially slow and meager in responding to needs outside the sound, and inclined more to public relations than to

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42. *Ibid.*; Zawadzki, interview, 21 Feb. 1992. NOAA also responded through several other offices. Its assistance in great measure predated the spill with publication of the Prince William Sound Environmental Sensitivity Index Atlas (1983) and of seasonal environmental sensitivity area summaries for PWS (1988) (S. Christopherson et al., "Exxon Valdez Oil Spill: NOAA's Response, March 24–September 20, 1989" [report documenting NOAA's response from 24 March–20 Sept. 1989], Feb. 1990, ed. L. Harris no. W1947, 1 and 3; D. Kennedy [NOAA], statement before the U.S. House of Representatives Committee on Merchant Marine and Fisheries, 10 Aug. 1989, no. C1460; and J. Michel [NOAA], interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and A. van Emmerik (FOSC staff), Anchorage, 28 May 1992, no. F674, tape, FOSC Exxon Valdez Archive).

43. Michel, interview, 28 May 1992; Christopherson et al., 2; and Kennedy, statement before the U.S. House of Representatives Committee on Merchant Marine and Fisheries, 1–3.

44. J. Robinson (NOAA), memorandum to Rear Adm. D. Ciancaglini, 21 Nov. 1989, no. W218, FOSC Exxon Valdez Archive, 1–2; Christopherson et al., 1; and Kennedy, statement before the U.S. House of Representatives Committee on Merchant Marine Affairs and Fisheries, 3.

45. Robbins and Ciancaglini, interview, 10 Sept. 1991; S. Christopherson (NOAA), interview by Dr. T. Leschine (FOSC staff), Seattle, 28 June 1991, no. F734, FOSC Exxon Valdez Archive.

46. Robbins and Ciancaglini, interview, 10 Sept. 1991; and Christopherson, interview, 28 June 1991. See also Lt. Comdr. J. Madden and Lt. I. Nance, interview by Lt. Comdr. R. Gaunt, Anchorage, 10 June 1992, no. F664, tape, FOSC Exxon Valdez Archive.

real response.<sup>47</sup> This lack of timely and substantive effort left the SSCs in Homer, Seward, and Kodiak feeling as stepchildren.<sup>48</sup> This unacceptable situation was fully recognized by the FOSC as a hard learned lesson.<sup>49</sup> Over the 1989–90 winter, the FOSC maintained reduced incident command post staffing in those places.

#### THE UNITED STATES CUSTOMS SERVICE

The U.S. Customs Service's participation was unplanned and unwelcome, but exemplifies the planning needed to expedite such ancillary regulation in the event of a major spill.

From the FOSC's viewpoint of responsibility to clean up this spill, there was a clear, present, critical, and desperate need for the best available foreign-flag vessels without delay. But U.S. Customs Service unreasonably delayed coastwise trade exclusion waivers.<sup>50</sup> This concern was expressed often in early message traffic and was a matter for personal FOSC and commandant attention.<sup>51</sup>

This level of concern should not have been necessary. The FOSC and Exxon were mobilizing forces to fight the biggest tanker spill in United States history, as the press noted prominently and daily. The president had declared the spill to be of national significance and made extraordinary dispositions to put the full weight of government behind the response. Perhaps the president erred in not naming the U.S. Customs Service expressly, but the idea was pretty clear. This was not business as usual.<sup>52</sup>

The coastwise trading laws are designed to ensure that only domestic vessels can participate in the coastwise trade. Likewise, U.S. Customs Service's mandate to enforce strictly this mandate is clear and straightforward. Nevertheless, spill management is an emergency response also under strict federal mandate and control, and in no sense a coastwise trade enterprise. A spill of national significance may be such that no one nation has an equipment inventory sufficient to respond; such equipment is unequally distributed in quality, availability, quantity, and suitability to particular cleanups.<sup>53</sup> Not only is speed the essence of any response, but cliff-hanging of the sort that happened here is not constructive.<sup>54</sup> A clearly expressed policy to make the necessary happen

47. Robbins, interview, 29 Aug. 1991; USCG Pollution Report O 170900Z April 1989 (PWS Polrep 48), sec. (3)(F); and USCG Pollution Report O 180740Z April 1989 (PWS Polrep 49), sec. (2)(F).

48. Christopherson, interview, 28 June 1991.

49. Lt. Comdr. J. Hersh, memorandum to FOSC, 29 July 1989, no. C2271, FOSC Exxon Valdez Archive.

50. Zawadzki, interview, 21 Feb. 1992; and Bodron, interview, 6 Mar. 1992. From the Coast Guards vessel safety viewpoint, Exxon was hiring the dregs of the U.S. flag fleet (Lt. Comdr. T. Falkenstein, memorandum to Capt. D. Zawadzki, 26 May 1989, no. C348, FOSC Exxon Valdez Archive).

51. USCG Pollution Report O 130618Z April 1989 (PWS Polrep 41), sec. (1)(F); USCG Pollution Report O 130655Z May 1989 (PWS Polrep 74), sec. (3)(B); USCG Pollution Report O 211539Z May 1989 (PWS Polrep 83), sec. (3)(E); USCG Pollution Report O 040459Z January 1989 (PWS Polrep 96), sec. (3)(A); and O. Harrison (Exxon), letter to Vice Adm. C. Robbins, 24 Apr. 1989, no. C495, FOSC Exxon Valdez Archive. Robbins endorsement on letter.

52. J. Saari (DOT), letter to J. Dowd (Coastal Barge), 12 May 1989, no. C1986, FOSC Exxon Valdez Archive. The Maritime Administration, with the analogous role and responsibility to protect coastwise trade from subsidized competition, acted reasonably promptly.

53. As Congress clearly recognizes. See FWPCA 311; 33 U.S.C.A., 1321 (j)(2)(A), mandating a "worldwide" inventory.

54. Zawadzki, interview, 21 Feb. 1992; Capt. J. Crowe, Jr., conversation record by E. Smith (Exxon), 24 Apr. 1989, no. C2161; and commandant fax to FOSC, 13 May 1989, no. C107, FOSC Exxon Valdez Archive.



would relieve the FOSC of needless uncertainty.<sup>55</sup> Many spill response vessels are special purpose. Although many of these are private for-profit vessels, their special purpose limits their competitiveness; their commercial use is in cleaning up the consequences of commerce. It should be presumed that these *will not* compete with U.S. flag vessels available for the purpose, not that they *will* compete.

It is anomalous in such circumstances to treat a discharger performing an emergent statutory cleanup task as though it were any commercial shipping entrepreneur petitioning for a waiver. This added unnecessarily to the burdens of the FOSC obliged to oversee that discharger's performance and assure compliance with applicable laws. Such proceedings are, as demonstrated here, cumbersome and slow, consuming energies and funds better employed in fighting the spill.

Compliance with the navigation laws may be waived upon the recommendation of any government agency, in the interest of national defense.<sup>56</sup> A pointed lesson of this spill is that to this should be added "...or of oil pollution prevention, abatement, or cleanup."<sup>57</sup> Pollution is a matter of internal national defense. Oil pollution defense is vested in the secretary of transportation, to whom the FOSC is accountable. The worldwide response resources inventory mandated by the Federal Water Pollution Control Act (FWPCA) gives the FOSC full command of the pertinent facts to judge what a spill requires, and should be conclusive for customs purposes. This would expedite the FOSC's obtaining the most suitable equipment, while obviating a discharger's instinct to economize by chartering foreign vessels, against which the U.S. Customs Service would otherwise need to be vigilant.

#### THE NATIONAL PARK SERVICE

This response provided an interesting and instructive study of contrasting agency relations arising from parallel situations, with nothing overt to account for the difference. It seems that in spill response, as in much else, attitude largely determines results.

The U.S. Department of Agriculture's Forest Service (FS) and U.S. Department of the Interior's National Park Service (NPS) had much in common at risk from this spill and cleanup, yet their relations with the FOSC were quite different. Both managed large tracts of oiled shoreline and upland endangered by the cleanup, with affected wildlife. Archaeological and cultural preservation was an intense concern of both, and both had a pronounced preference for the incident command system as a means to manage

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55. It is suggested below that legislation could supply a swift and certain secretary of transportation certification procedure. Meanwhile, it is difficult to doubt that customs has discretion to act, with dispatch. A memorandum of understanding would do much to clear the air.

56. S. Martoche (assistant secretary of the treasury), letter to R. Mackechnie, Jr. (Donohue and Donohue, counselors at law), 14 Apr. 1989, no. C496, FOSC Exxon Valdez Archive.

57. Because the waiver authority is statutory, it is assumed that an amendment would be required, and that no regulation or memorandum of understanding would serve. This suggested amendment could be expanded at the instance of other interested agencies.

the crisis. But where relations with the FS were smooth and productive, those with the NPS often showed friction and strain.<sup>58</sup>

From the FOSC's perspective, relations with the FS were regarded as uniformly constructive.<sup>59</sup> The FS participated fully, attended all meetings, and kept the FOSC briefed.<sup>60</sup> This assessment was reciprocated, notwithstanding the FS's clear conviction that the FOSC was remiss in failing to use the incident command system.<sup>61</sup> The NCP/ARCP system of open consultation and communication within the RRT, or in this spill within the ISCC and FOSC organization, worked to mutual benefit and problem solving.<sup>62</sup>

The NPS, on the other hand, seems to have preferred a more independent course. Its representative attended FOSC committee meetings about a third of the time, although Interior's environmental oversight representatives were responsive and easy to work with by telephone.<sup>63</sup> Its conviction that the incident command system should have been used to manage the response is clear and categorical, and it desired an aesthetic level of cleanup higher than the FOSC considered feasible, by manual and mechanical means; it wanted no bioremediation on its lands, for example.<sup>64</sup>

National Park Service personnel, at an Alaska Oil Spill Commission hearing in Seward, testified that the cleanup was mismanaged.<sup>65</sup> The credentials of those making this early and harsh judgment are not known, but even a response expert might hesitate so to testify, for lack of precedent and standard. While it has been noted in this report that response was slow to arrive outside of Prince William Sound, FOSC representatives attended Seward Multi-Agency Advisory Committee (MAC) meetings from their second day, and management followed apace.<sup>66</sup> This is not to say that management could not have been improved.

In like vein, NPS people complained to the Sierra Club Legal Defense Fund that their concerns about cleanup or shoreline assessment were not being properly addressed. For the same reasons as above (that the basis for such claims is questionable, and that these circumvent good problem solving procedures), this surprised and disturbed the FOSC.<sup>67</sup> The displeasure was reciprocated.<sup>68</sup>

Interior drafted an independent course for the NPS, U.S. Fish and Wildlife Service (FWS), and Bureau of Indian Affairs (BIA) for the 1990 cleanup, including

58. The NPS has set out its role in, W. Hanable, "The Exxon Valdez Oil Spill and the National Park Service: A Report on the Initial Response," 1990, no. W351, FOSC Exxon Valdez Archive.

59. Zawadzki, interview, 21 Feb. 1992; Michel, interview, 28 May 1992; and Christopherson, interview, 28 June 1991.

60. Robbins and Ciancaglini, interview, 10 Sept. 1991.

61. J. Mattson (FS), interview by Lt. Comdr. R. Gaunt, 23 Sept. 1992, no. F710, tape; and J. Knorr (FS), letter to Vice Adm. Robbins, 21 Sept. 1989, no. C1484, FOSC Exxon Valdez.

62. See, for example, Rear Adm. Ciancaglini, letter to J. Knorr (FS), 15 May 1990, no. W1090, FOSC Exxon Valdez Archive.

63. Robbins and Ciancaglini, interview, 10 Sept. 1991; and Zawadzki, interview, 21 Feb. 1992.

64. Hanable, "The Exxon Valdez Oil Spill and the National Park Service: A Report on the Initial Response"; Zawadzki, interview, 21 Feb. 1992; and Bodron, interview, 6 Mar. 1992.

65. "ICP Seward Polrep for period ending 0700," 15 July 1989, FOSC Exxon Valdez Daily Archive.

66. A. Castellina, "The Seward Multi-Agency Coordination Group (MAC) Response to the Exxon Valdez Oil Spill," 14 July 1989, no. C977, FOSC Exxon Valdez Archive.

67. Rear Adm. Ciancaglini, letter to P. Gates (DOI), 21 Apr. 1990, no. W861, FOSC Exxon Valdez Archive.

68. P. Gates (DOI), memorandum to NPS and FWS, 25 Apr. 1990, no. W923, FOSC Exxon Valdez Archive.

shoreline surveys.<sup>69</sup> As the 1990 cleanup began, the spring shoreline assessment in Kodiak was slowed by ADEC and NPS team members conducting their own agency activities during the assessment.<sup>70</sup> During 1990, NPS employees reported more oil in Pony Cove than the shoreline assessment team (SAT) had reported. The Seward MAC responded, and a vessel and several MAC representatives were sent to investigate, including two NPS representatives. This expensive sortie found in total about one pint of mousse scattered on rocks in the cove.<sup>71</sup>

The power of the NPS to enforce its independent course by permit power was a problem left unresolved in this response, that should be resolved for future FOSCs. The FOSC has a mandate for effective, expedited cleanup. Affected agencies have their own mandates, and the potential for conflict is so high that judgment, compromise, and accommodation become essential. It seems that the congressional purpose is to promote effective cleanup by integrating the concerns of oil impacted agencies into the cleanup mandate through the consultation process leading to FOSC decision and direction. If there were any doubt before hand, at the time of this cleanup, that doubt should be resolved by current FWPCA amendments and OPA 1990.

Notwithstanding, the U.S. Department of the Interior asserted and stood upon the plenary permit authority of its bureaus, the NPS, the FWS, and the BIA, as to lands or resources managed by them and affected by cleanup.<sup>72</sup> The FOSC's concern for this arrangement was never resolved and it should be.<sup>73</sup> Otherwise, a vote in consultation could be nullified by simple veto, should a bureau put its interests before those of other consulted agencies, state and federal, and the FOSC's decision.

Such a reservation to the NCP compact in effect asserts a decisional authority superior to that vested in the FOSC. As this spill amply demonstrated, many interests are interlocked; rarely is any single agency affected only in isolation from others. A cleanup is a federal effort and should be an integration of peers. There should be no concern that an agency would consider in its permit process, which it would not, or could not, as well lay before its peers in consultation, so that its impact on their responsibilities can be understood.

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69. P. Gates (DOI), letter to Capt. Bodron, 12 Jan. 1990, no. W619, FOSC Exxon Valdez Archive. Attachment.

70. USCG, "ICP Kodiak Daily Report," 23 Apr. 1990, sec. (9)(C), FOSC Exxon Valdez Daily Archive. As the 1990 season ended, several agencies followed up the August Shoreline Assessment with their own surveys, and requested additional work; whether the NPS was among them is not clear. Comdr. E. Page, memorandum to FOSC and ICPs, 27 Aug. 1990, no. W1960, FOSC Exxon Valdez Archive.

71. Lt. T. Benson, memorandum to FOSC operations officer, 13 July 1990, no. W1697, FOSC Exxon Valdez Archive. For over a year, standing instructions enjoined verification and documentation of oil sightings by NPS and FWS employees, to avoid just such costly and time consuming responses (P. Gates [DOI], memorandum to NPS and FWS, 25 May 1989, no. C357, FOSC Exxon Valdez Archive).

72. P. Gates (DOI), letter to Rear Adm. D. Ciancaglini, 8 May 1990, no. W1009; and P. Gates, letter to Capt. D. Bodron, 12 Jan. 1990, 2, no. W619, FOSC Exxon Valdez Archive. Not even a single contact was conceded; each bureau was autonomous.

73. Comdr. M. Dorsey, memorandum to Rear Adm. D. Ciancaglini, 21 May 1990, no. W1162, FOSC Exxon Valdez Archive.

## SUMMARY

The *Exxon Valdez* spill tested the ability of federal agencies to deploy their resources and personnel quickly in the face of an emergency, and to work cooperatively with the FOOSC and other responding authorities as the response geared up. In retrospect, the previous experience of the responding agencies with emergency response situations, and their experience with the particular arrangements under which oil spill response occurs, seem to have strongly influenced how effectively and cooperatively they participated in the *Exxon Valdez* response.

The U.S. Department of Defense, while unfamiliar with oil spill response, was nevertheless the proven master at dealing with emergencies of all kinds. Its massive resources, its extraordinary rapid deployment capabilities, and the depth and experience of its command, all combined to make the Coast Guard–DOD partnership that evolved a vital component of the response. The National Oceanic and Atmospheric Administration likewise provided essential assistance through its scientific support mission. The National Oceanic and Atmospheric Administration's role was not only well understood and codified in law, but also well tested through the repeated drills and responses that had marked NOAA's entire life as a federal agency.

The U.S. Customs Service, on the other hand, had seldom been called upon to facilitate the procurement of vessels for an oil spill response, and had seldom found itself in a situation where it was expected to grant coastwide trade exclusion waivers on an emergency basis. It was clearly unprepared to act outside its normal rules, and facilitation did not occur.

The National Park Service, while well practiced in emergency response to forest fires under the incident command system, found itself ill-prepared to deal with the demands of oil spill response under the terms of the NCP. The National Park Service had little working experience with the Coast Guard or the NCP, and little expertise in the area of oil spills. Unwilling or unable to trust others among federal resource agencies to represent its interests, the National Park Service took an increasingly independent course. The National Park Service seemed to have had a particularly difficult time squaring its traditional resource protection mandate with the reality of the level of intrusion into the natural environment that the degree of cleanup it wanted required.



## CHAPTER 20. RESPONSE MANAGEMENT AUTHORITY

### OVERVIEW

In this section limitations on the authority the Federal On Scene Coordinator (FOSC) brings to an oil spill response are discussed through example. These and other limitations had a pervasive effect on the conduct of operations under the *Exxon Valdez* FOSC. The three issue areas focused upon here are: waste management, cultural resource protection, and the ability of the FOSC to declare a removal action complete once he or she finds that the limits of effectiveness have been reached in cleanup operations.

A root problem common to all these situations was a lack of cooperation among participating parties, with the state of Alaska frequently becoming the chief, or sole dissenting party. This discussion begins with the vision of cooperation among parties encompassed within the National Contingency Plan (NCP), the Alaska Regional Contingency Plan (ARCP), and other statutes and regulations that governed the participation of the parties to the *Exxon Valdez* response. While cooperation among agencies is prominently displayed as a goal of oil spill response under these regulations and plans, they do little to assure that cooperative efforts will in fact take place. The plenary power states have to protect their possibly differing interests in water quality vis-à-vis the federal interest, granted under the Clean Water Act, appears to limit fundamentally the extent to which the FOSC can “demand” cooperation.

### COOPERATION OF STATES WHOSE WATERS ARE AFFECTED BY A SPILL: TO WHAT EXTENT CAN IT BE ASSURED?

When an oil spill occurs, the FOSC (likely to be a pre-designated individual under an area contingency plan), in initiating a response, is acting as an agent of the president, under delegated powers:

The President shall, in accordance with the National Contingency Plan and any appropriate Area Contingency Plan, ensure effective and immediate removal of a discharge...of oil [which affects or threatens four defined federal interests].<sup>1</sup>

Beyond that, the FOSC's guidance is largely articulated in the Marine Safety Manual, a Coast Guard policy document. As a result, the FOSC may face a variety of external challenges in directing (or monitoring) the deployment of cleanup resources, the selection of cleanup techniques, seeking methods and sites for the disposal of wastes, or ultimately to terminate a cleanup that no longer warrants the continued expenditure of funds.

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1. Federal Water Pollution Control Act (FWPCA), sec. 311 (c)(1)(A); 33 U.S.C.A. 1321 (c)(1)(A).

Because significant powers are delegated to the states and other parties under the Federal Water Pollution Control Act (FWPCA) and other legislation (including the Oil Pollution Act of 1990), the FOSC may have responsibility not fully matched by his authority, and may be in a position where the goal is to coordinate, but not fully control, a removal action:

Whenever a marine disaster upon the navigable waters of the United States has created a substantial threat of pollution hazard to the public health or welfare...the President may...coordinate and direct all public efforts directed at the removal or elimination of [the] threat.<sup>2</sup>

Federal agencies should: coordinate their planning, preparedness, and response activities with affected states....Each state governor is requested to designate one state office/representative to represent the state on the appropriate RRT.<sup>3</sup>

As Admiral Ciancaglini noted in an interview late in 1991, the difference between an on scene *coordinator* and an on scene *commander* is considerable.<sup>4</sup> Echoing this comment, Admiral Robbins noted that, "If the state could be assured that the FOSC, should he become a commander, would look out for their every interest in a satisfactory manner, then the states might give up [their rights], but they'll never be [that] satisfied."<sup>5</sup> Should a state decline to agree with the course established in consultation with the responsible party and directed by the FOSC, as Alaska did increasingly during the summer of 1989 and throughout 1990, then the FOSC will find himself severely tested, as was the case in the *Exxon Valdez* oil spill.

Cooperation between state and federal agencies is critical because "any state or political subdivision" retains the plenary power to impose "any requirement or liability with respect to the discharge of oil or hazardous substance into any waters within such State."<sup>6</sup> State responsibilities and authorities are laid out in the regional contingency plans.<sup>7</sup> The Alaska Department of Environmental Conservation (ADEC) is the designated Regional Response Team (RRT) member under the Alaska Regional Contingency Plan. Its statutory authority in oil spill response comes from Alaska Statute 46, and its role includes representing and coordinating "the RRT involvement of various other state, county, and municipal organizations."<sup>8</sup>

Cooperation is certainly the intended outcome of the Alaska Regional Contingency Plan: "The purpose of this Regional Plan is to provide for a coordinated and integrated Federal and State agency response posture in Alaska at the Regional Response Team (RRT) level."<sup>9</sup>

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2. FWPCA, sec. 311(d).

3. 40 CFR 300.105 (a)(3); 40 CFR 300.180 (a).

4. Rear Adm. D. E. Ciancaglini and Vice Adm. C. E. Robbins, interview by Dr. T. Leschine (FOSC staff), Comdr. D. Maguire, and Lt. Comdr. R. Gaunt, Anchorage, 10 Sept. 1991, no. F106, tape, FOSC Exxon Valdez Archive.

5. Ibid.

6. FWPCA, sec. 311 (o)(2); 33 U.S.C.A. 1321 (o)(2). See also, Oil Pollution Act of 1990 (OPA 1990), sec. 1018 (a); 33 U.S.C.A. 2718 (a).

7. 40 CFR 300.210 (b).

8. EPA and USCG, "Alaska Region Oil and Hazardous Substances Pollution Contingency Plan" (ARCP), sec. 302 (E)(1), Oct. 1986.

9. EPA and USCG, ARCP, sec. 102.

Moreover, the notion that the state of Alaska, through its representative agency ADEC, should cooperate with federal agencies involved in response to an oil discharge is reinforced by the Alaska legislature, through its 1980 Oil Pollution Act:

The legislature intends by the enactment of this legislation:

- (1) [That ADEC have] the authority and capability...to encourage and ensure, in accordance with 33 U.S.C., sec. 1321, cooperation with the United States Coast Guard and other state and federal departments and agencies;
- (5) that oil discharge containment, cleanup or contingency measures which are undertaken, directed, or authorized by the Department of Environmental Conservation should supplement and support federal cleanup and containment actions under 33 U.S.C., sec. 1321.<sup>10</sup>

While cooperation is clearly desirable, cooperation does not imply that disputes will not occur. Disputes are perhaps inevitable because at some level the interests of agencies, particularly state and local authorities vis-à-vis those representing the federal government, are different. These differences are recognized implicitly, and sometimes explicitly, in federal law. When disputes do arise, the key is to resolve them without undue cost and delay.

Dispute resolution procedures exist in both the Alaska Regional Contingency Plan and in the Marine Safety Office (MSO) Valdez Local Contingency Plan. The ARCP looks to the "appropriate co-chairman of the RRT" to resolve disputes arising from the conduct of a federal response, with elevation to the National Response Team (NRT) if "resolution is inappropriate at the regional level."<sup>11</sup> The MSO Valdez Local Contingency Plan expects the FOSC to resolve all disputes "with the exception of those disputes involving government agencies." It stipulates that, "Inter-agency disputes will be referred to the RRT."<sup>12</sup>

There is little to suggest that the Alaska RRT played an effective role in resolving disputes; nor is there evidence that the FOSC actively sought intervention by the Alaska RRT for the purpose of resolving disputes. At the same time, the continuing dialogue among agencies through the Alaska RRT may have served to prevent many disputes from arising in the first place. While a number of thorny issues emerged to become major disputes involving the FOSC, Exxon, and the state, many other issues that could have become major disputes did not. To cite just one example, the introduction in 1990 of the Technical Advisory Group (TAG) system for developing segment-by-segment shoreline treatment recommendations initially provoked a dispute between the FOSC and the state of Alaska. But there were very few overt disputes involving TAG recommendations once the system got underway.<sup>13</sup>

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10. ADEC, 1980 Temporary and Special Resolves, reprint of ch. 116 (SLA 1980), sec. 1 (b) of Alaska Oil Pollution Act, in "Alaska Oil and Hazardous Substances Pollution Contingency Plan", annex 7, Sept. 1982, 40-42.

11. ARCP, sec. 407.

12. USCG, "MSO Valdez Local Contingency Plan," sec. 605.

13. See chapter 7, "Shoreline Cleanup in 1990."



## WASTE DISPOSAL

Unlike the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Federal Water Pollution Control Act (FWPCA) assumes, but does not require, that states will provide the disposal facilities necessary for the voluminous wastes that will be generated during a major oil spill response. Where CERCLA requires that "the state will assure the availability of a hazardous waste disposal facility," as a condition of receiving relatively minor federal financial assistance, the Clean Water Act's section 311(c) speaks only of *removal* of oil discharges affecting federal interests.<sup>14</sup> This duality is carried over into the NCP regulations that implement both laws. Whereas CERCLA's "release removal" includes "the disposal of removal material," FWPCA's "discharge removal" is simply removal.<sup>15</sup>

The NCP, in effect, may only have succeeded in leaving federal agencies and Exxon at the mercy of the state of Alaska in the matter of disposal of oily debris, with the consequences that were discussed in the "Waste Management chapter" of this report. The matter of where and how disposal will take place is left to implication by the NCP, even as it commands that disposal shall be carried out in accordance with applicable contingency plans:

Oil and contaminated materials recovered in cleanup operations shall be disposed of in accordance with Federal regional and Federal local contingency plans.<sup>16</sup>

The requirement for local contingency planning is, however, less stringent:

[Local contingency plans]...should identify...waste disposal...facilities consistent with local and State plans developed under [RCRA].<sup>17</sup>

The Coast Guard's removal regulations merely reiterate the injunction of the NCP:

Each person who removes or arranges for the removal of a discharge of oil from coastal waters shall:

- (e) Dispose of recovered oil and oil contaminated material in accordance with applicable State and local government procedures.<sup>18</sup>

While the Alaska Regional Contingency Plan did provide for disposal as directed by these regulations, and while the state of Alaska had agreed to provide the disposal facility, it had not done so.

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14. CERCLA, sec. 104 (c)(3)(B); 42 U.S.C.A. 9604 (c)(3)(B).

15. 40 CFR 300.6, 1 July 1988 revision.

16. 40 CFR 300.53 (c).

17. 40 CFR 300.43 (a). The reference to RCRA is misplaced as to, or does not apply to, oil. Only CERCLA requires that disposal facilities comply with the SWDA (RCRA) (42 U.S.C.A. 9604 [c][3][B]). But CERCLA does not apply to oil, unless the oil is scheduled as itself a hazardous substance (42 U.S.C.A. 9601 [14]). The SWDA provides that, "Nothing in this chapter shall be construed to apply to (or to authorize any State, interstate, or local authority to regulate) any activity or substance which is subject to the [FWPCA]...except to the extent that such application (or regulation) is not inconsistent with the requirements of such [Act]" (42 U.S.C.A. 6905 [a]). Manifestly, any application (or regulation) which does not "ensure effective and immediate removal of a discharge" would be inconsistent with the FWPCA.

18. 33 CFR 153.305, 1 July 1988 revision.

The role and responsibilities with respect to the ARCP of ADEC, the designated state RRT member, included responsibilities in the area of waste management:

ADEC has various functions, capabilities and resources both before and during a pollution incident. They include:

- c. Determining and approving the locations to be used as pollutant disposal sites.<sup>19</sup>

Through exercise of its permitting authority, ADEC did permit Exxon to operate limited-capacity incinerators, and to use the Alyeska terminal's oil water separators to process recovered oil-water mixtures.<sup>20</sup> But ADEC neither permitted disposal nor designated disposal sites for the great bulk of the oily solid waste that was being recovered from shorelines throughout the response area. Except for minor quantities incinerated, the major part of removed waste was processed, barged to Oregon, and transshipped to an inland Oregon hazardous waste disposal facility. As a result, a significant portion of the site's capacity was filled with wastes whose level of "hazard" was below the *de minimis* threshold for which the facility was built.

Likewise, although Exxon had contracted in 1989 for two high-capacity incinerator barges, to operate at offshore locations, ADEC took ninety-nine days to issue air permits for one of them, and withdrew the permit issued for the other within three weeks.<sup>21</sup>

While many of the involved federal agencies were expediting decisions by waiving or relaxing their cognizant requirements,<sup>22</sup> Alaska state agencies seemed to Coast Guard officials to be seeking risk-free decisions, requesting ever more information until any possibility of environmental harm could be eliminated.<sup>23</sup> Exxon's incineration permit applications were handled routinely, treated as land-based incinerators whose authorization would first require the development of new standards, with the standards themselves becoming moving targets.<sup>24</sup>

Waste disposal was seen by some Coast Guard officials as capable of substantially delaying or even halting the response. The Alaska Department of Environmental Conservation seemed to be engaged in a game designed to assure only that the wastes would not be disposed in Alaska. Because ADEC officials were not willing to accept responsibility for such a decision, they chose instead a strategy of indefinite delay, pushing the permit review process to its fullest, as if unlimited time were available for the decision.<sup>25</sup>

The Alaska Department of Environmental Conservation had anticipated the possibility that oily waste disposal options might someday be necessary. The agency had, in earlier

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19. EPA and USCG, ARCP, sec. 302 (E)(3)(c).

20. See chapter 13, "Waste Management" for this and other substantive details referenced in this subsection.

21. Details are provided in chapter 13, "Waste Management."

22. See chapter 19, "Federal Intergovernmental Relations."

23. Capt. D. Zawadzki, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, A. van Emmerik (FOSC staff), Anchorage, 21 Feb. 1992, no. F214, tape; and Comdr. D. Rome, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, Lt. Comdr. H. Young, Anchorage, 22 Aug. 1991, no. F109, tape, FOSC Exxon Valdez Archive.

24. Capt. D. E. Bodron, memorandum to Capt. Larrabee, 11 July 1989, no. C858, FOSC Exxon Valdez Archive; and Zawadzki, interview, 21 Feb. 1992.

25. *Ibid.*

contingency planning, noted that Alaska's climate and permafrost conditions (in the arctic north) rendered only two methods of disposing of oil and oily materials viable: "Reinjection...and burning, both in an incinerator and in the open."<sup>26</sup> Land-based incinerators had been licensed in conjunction with the pipeline, and though the Prudhoe Bay incinerator saw some use, that facility was incapable of handling the great volume of waste produced in the response and inordinately difficult to access. Although the possibility of a major (if not catastrophic) spill near Valdez had clearly been contemplated, no adequate disposal site or facility had been provided in that area.

One result of the state's intransigence on oily debris disposal was that Exxon spent \$5 million refitting a barge for waste hauling and \$11 million on barging the wastes to Oregon.<sup>27</sup> While this may seem a small amount in comparison to the billions Exxon ultimately spent on the cleanup, it is an enormous amount in comparison to anticipated costs at the time. This amount represented nearly half of the then-authorized level of the FWPCA 311(k) fund, and about three times the amount then available in the fund.<sup>28</sup> It represented sixteen percent of the full Trans Alaska Pipeline Act (TAPA) Fund, and exceeded the \$14 million limit on liability under either act.<sup>29</sup>

#### AUTHORITY TO TERMINATE A RESPONSE

The FWPCA is silent on ending a response, an act that requires, among other things, that the FOSC certify that federal funds have been properly spent. At the time of the *Exxon Valdez* grounding, the FOSC's sole guidance was the Marine Safety Manual, that provides the following criteria:

Generally, for oil discharges, removal is "complete" when:

- a. There is no longer any detectable oil present on the water, adjoining shorelines, or places where it is likely to reach water again; or
- b. Further removal operations would cause more environmental harm than the oil to be removed; or
- c. Cleanup measures would be excessively costly in view of their insignificant contribution to minimizing a threat to the public health or welfare, or the environment; and
- d. Activities required to repair unavoidable damage resulting from removal actions have been performed.<sup>30</sup>

The NCP does encompass, however, the expectation that the FOSC will consult with the other parties involved in a response in making such a determination. The Marine Safety Manual states that, "Where uncertainty exists, the [F]OSC may seek the advice of

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26. ADEC, 1980 Temporary and Special Resolves, 115.

27. Ciancaglini and Robbins, interview, 10 Sept. 1991.

28. \$35 million under former (33 U.S.C.A. 1321 [k]).

29. \$100 million under former (43 U.S.C.A., ch. 34, sec. 1653 [c][3]).

30. USCG, Pollution Response and Determining Removal Completeness chapters in "Marine Safety Manual" (Commandant Instruction no. M16000.7), vol. 6, ch. 7, 20-21.

the RRT in making this determination.”<sup>31</sup> The requirement for consultation is reiterated (and stated more strongly) in the relevant contingency plans. The ARCP, for example, states that:

The [F]OSC will make the decision regarding termination of federal response activities after consulting with the RRT.<sup>32</sup>

The local contingency plan for MSO Valdez, in force at the time of the spill, likewise states:

The [F]OSC in consultation with federal and state agencies will determine when federal response operations will terminate.<sup>33</sup>

This presented a problem for the FOSC when, in 1990, it began to appear that at least some shoreline segments could be signed off as complete, in that ADEC was unlikely to give its assent to such a decision. The advice Admiral Ciancaglini received from Coast Guard Headquarters (and the stance taken by both Admirals Ciancaglini and Robbins)<sup>34</sup> was that: “The FOSC terminate federal removal activities, without prejudice to the State’s efforts to compel Exxon to meet a State standard. The federal government cannot and should not attempt to preempt states rights in this matter.”<sup>35</sup>

The fact that the cleanup did continue, into 1992, permitted the response to come finally to an end that all parties could agree to; an agreement that, for a variety of reasons, would have been more difficult in earlier years. The problem of recalcitrance by state authorities was seemingly resolved with the replacement, through Alaska’s gubernatorial election, of Governor Steve Cowper by Governor Walter Hickel, who greatly desired to lay the spill to rest.

## CULTURAL AND ARCHAEOLOGICAL RESOURCE ISSUES

More than in any previous oil spill in U.S. waters, cultural and archaeological resource constraints figured prominently in the *Exxon Valdez* response.<sup>36</sup> Because Exxon directly maintained the extensive archaeological protection program that developed, cultural resource protection costs did not have to be treated as response costs under the FWPCA or the Oil Pollution Act of 1990 (OPA 1990). Nevertheless, the question remains as to whether they would be, should a responsible party not pay them directly. A related question concerns the extent to which a response should yield to cultural and archaeological protection.

The question is not whether maximum cultural resource protection should be ensured, consistent with cleanup needs, but whether the added costs are for the account of a discharger, or of the fund. The question is two-fold: first, are such costs arguably

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31. Ibid.

32. EPA and USCG, ARCP, sec. 406.

33. USCG, “MSO Valdez Contingency Plan,” sec. 604.

34. Ciancaglini and Robbins, interview, 10 Sept. 1991.

35. Rear Adm. J. Sipes, facsimile to Rear Adm. D. E. Ciancaglini, 23 July 1990, no. W1318, FOSC Exxon Valdez Archive.

36. Rome, interview, 22 Aug. 1991. Which appears to have been the first to involve such constraints, at least in significant degree.

covered by the FWPCA or OPA 1990, and if so, what limit upon recovery flows from the balance to be struck between cleanup and preservation?

There can be no serious question that cultural resources should be protected so far as it is within an FOSC's power to do so. Artifacts, if not preserved, are lost forever, and many are part of a cultural heritage sometimes sacred to people whose concerns should fall under the FWPCA. But questions arise out of their very nature: they are human artifacts. They are neither natural resources, nor directly matters of human welfare and health, except as their loss causes human trauma comprehended by the acts. Moreover, cultural and archaeological resources may not be threatened so much by oil itself as by activities associated with the response. The question of whether the FWPCA means to protect such artifacts is itself not free of doubt.

The chief body of regulations is the Code of Federal Regulations (CFR), Title 36, Part 800, implementing the National Historic Preservation Act.<sup>37</sup> These regulations first note that:

Section 110(f) of the Act requires that Federal agency heads, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historic Landmark that may be directly and adversely affected by an undertaking.<sup>38</sup>

The regulations then implement the so-called "section 106 process," the purpose of which is "to accommodate historic preservation concerns with the needs of Federal undertakings."<sup>39</sup> The section 106 process clearly contemplates advance consultation, a process likely to be constrained by the realities of an oil spill response. Further, the preservation of cultural artifacts is given no particular priority status. While the regulations provide for "emergency undertakings" and address "properties discovered during implementation of an undertaking," emergency status "does not apply to undertakings that will not be implemented within 30 days after the disaster or emergency."<sup>40</sup> This gives no guidance to an FOSC who immediately begins a response that will last more than thirty days.

In sum, existing historic and cultural properties protection regulations do little to aid the FOSC. The accommodation process is akin to the coordination process, and both are amorphous. Both begin a process, say little about carrying the process out, and nothing about when it should end.

Neither the FWPCA nor OPA 1990 define cultural resources as protected interests. Both dwell heavily upon human health and welfare and natural resource protection, that is, upon the living, not upon the dead. Human artifacts are not natural resources. Unless human health and welfare are construed to encompass distress occasioned by the disturbance of such artifacts, artifacts are not included in this form. Neither act defines human health and welfare. The FWPCA does not define "natural resources,"

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37. 16 U.S.C.A., sec. 470w-6, "Effective date of regulations."

38. 36 CFR 800.1 (a).

39. 36 CFR 800.1 (b).

40. 36 CFR 800.12; and 36 CFR 800.11.

and OPA 1990 does so in terms that do not address human artifacts.<sup>41</sup> Both acts, however, define "remove" or "removal" as including "other actions as may be necessary to minimize or mitigate damage to the public health or welfare, including...public and private property."<sup>42</sup>

This suggests that cultural resource protection costs are discharger-compensable or fund-payable, but leads to the second question: whether artifacts threatened not directly by oil but indirectly by response are encompassed by either act. No language of either can be construed to bear upon this point. It can be said only that a response cannot be deemed effective, that endangers any property, the endangerment of which is other than necessary to an effective response. Pending amendment or judicial construction, therefore, an FOSC should give fullest effect to the National Historic Preservation Act.

This leads to the final question: how the FOSC should balance cleanup and preservation interests. This is not quite a variation upon the question of when to stop a response addressed above, for it adds the layer of uncertainty where to "accommodate" preservation atop the uncertainty of when "effective" response is no longer maintainable. At some point, costs will cease to be recoverable response costs, and become non-compensable preservation costs. At some point as well, an undue regard for preservation will impede an effective cleanup.<sup>43</sup> This spill produced no definitive answers to these questions as a matter of authority. Future FOSCs faced with such a problem can expect to face also doubts as to the lawful expenditure of money.

## **SUMMARY**

The FWPCA ensures that the views of the state, natural resource managers, and other government agencies are integral to the FOSC's decision making process during an oil spill response. Moreover, the act does not supersede other statutory authority. The result is that several agencies and the state possess parallel authority. Each can act under the FWPCA as part of the RRT and can simultaneously exercise its organic statutory authority. The implications of this arrangement were seen particularly in the handling of oily waste disposal. The state, as part of the RRT, was to have identified waste disposal sites, which it never did. Then, acting under its permitting authority, the state delayed the use of floating oily waste incinerators by the responders until they could no longer serve any useful purpose.

The situations portrayed in this chapter are demonstrative of the issues that arise when the person in charge of the response is de facto a coordinator rather than a commander. Cooperation among responding parties is a widely articulated goal of legislation, regulations and contingency planning. But it cannot be assured. When major disputes arose, the dispute resolution procedures envisioned in the NCP proved to be of little use. The need for decisive and timely decision making is critical in the early stages of an oil spill, yet the plenary powers of the states and other authorities must be respected. Conflicting and competing demands will likely always be present during an oil spill of

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41. 33 U.S.C.A. 2701 (20).

42. 33 U.S.C.A. 1321 (a)(8); and 33 U.S.C.A. 2701 (30).

43. See McArthur Pass incident under chapter 11 "Cultural Resources Constraints."

the magnitude of the *Exxon Valdez* spill. In its impact on cultural resources, the spill also made apparent that there remain areas of significant national and local interest where the authority of an FOSC to act in the name of resource protection has not been made at all clear.

## CHAPTER 21. PUBLIC AFFAIRS AND PROTOCOL

### OVERVIEW

During a spill response it is customary for the Federal On Scene Coordinator (FOSC) to designate a senior officer (often himself) to serve as public affairs officer.<sup>1</sup> During a major spill, the job of public affairs is to handle communications with several constituencies, including the media, the public, other governmental and intergovernmental organizations, and others who have informational needs. Closely associated with the public affairs function are the protocol activities. These consist of planning, logistics, and escorts for high level visitors to the spill area.<sup>2</sup> Because of the close relationship of the public affairs and protocol functions, they will be considered together in this chapter.

There are important protocol and public affairs lessons to be learned from the *Exxon Valdez* experience.<sup>3</sup> Perhaps foremost among these, the Coast Guard appears to have underrated the significance of the media relations component of the public affairs task. The failure to place sufficient emphasis upon media relations, both before and during the spill, added to the problems faced by response managers. As Captain Don Jensen, who served as a key public affairs/protocol leader on the FOSC's staff, later wrote, "Often the success of a cleanup operation is ultimately judged by the perception of success as reported by the press and visiting dignitaries rather than the actual number of gallons recovered or natural resources protected."<sup>4</sup> The difficulties encountered in this area during the *Exxon Valdez* response suggest that Jensen's observations are important for Coast Guard planners to consider in planning for future spills of national significance.

### PUBLIC AFFAIRS OPERATIONS IN 1989

The general procedure followed by the Coast Guard in setting up public affairs operations for a major response is to establish a temporary on scene media office, often to "hold the fort" pending more formal arrangements. A fully operational public affairs program includes also a rear echelon news office which is sometimes physically removed from the spill response area. Rear echelon specialists handle most telephone inquiries as well as those activities which, by their routine nature, lend themselves to being dealt with in a less pressured setting. To complete the public affairs setup, an incident news office is established at the FOSC's headquarters to handle overall media

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1. Capt. D. S. Jensen, "Public Affairs During Spill of National Significance," in *Oil Spills: Management and Legislative Implications* (proceedings of the conference Newport, Rhode Island: American Society of Civil Engineers, 1990), 419.

2. 40 CFR 300.39, 1 July 1988 revision.

3. USCG (G-MER), Tank Ship Exxon Valdez: Oil Spill Management Analysis Debrief, in "G-MER Conference Report" (summary of conference held in Alexandria, Virginia, 4-6 Dec. 1989), no. W292, FOSC Exxon Valdez Archive. "G-MER" is a term used by the Coast Guard when referring to USCG Headquarters Marine Environmental Response Division. The G-MER conference assembled three dozen individuals, mostly from the Coast Guard, who had been involved with the 1989 response. The purpose of the session was to identify strengths and weaknesses of the response, and to make recommendations for future spill incidents.

4. Jensen, 418.



dealings and to coordinate community relations activities. A professional public affairs officer is assigned, and normally serves as primary spokesperson for the FOSC.<sup>5</sup>

During the first few hours of the spill, Commander Steve McCall, commanding officer, Marine Safety Office (MSO) Valdez, served as public affairs spokesman, in addition to assuming the FOSC role.<sup>6</sup> By 1000 on the first day, it became evident that the incident would generate high interest, and that the delegation of many tasks would be necessary. The FOSC appointed an MSO staff yeoman as public affairs spokesman, with instructions to serve as the single individual who would handle the flow of incoming inquiries about the spill. In the meantime, in Juneau, Coast Guard District 17 public affairs officer Lieutenant Edward Wieliczekiewicz, who learned of the incident via a local news broadcast, immediately proposed that he be detailed to Valdez to assume the public affairs burdens that would be faced. Wieliczekiewicz journeyed to Valdez, establishing operations at approximately 1500 on 24 March.<sup>7</sup>

Although primary news operations were established in Valdez, public affairs operations took a major departure from standard procedures. Instead of setting up a rear echelon office, "everyone came to Valdez."<sup>8</sup> As a result, critical inquiries became mixed with those of a more routine nature, and the volume of activity increased, as Valdez became the contact point for nearly all inquiries.

One of the first actions taken by Wieliczekiewicz was to call on Coast Guard Headquarters in Washington, D.C., for assistance from the Pollution Response Branch (G-MEP-2), Public Information Assistance Team (PIAT).<sup>9</sup> The call was made late in the afternoon, on 24 March. Two members of PIAT, a chief petty officer and a first class petty officer, arrived very shortly afterwards.<sup>10</sup> The first of many other arrivals from various district organizations was a petty officer first class, dispatched from the 13th district, who appeared on 28 March.

The first public affairs news center was thus established at the MSO, in a 12 ft. x 20 ft. space (the officer's wardroom), which was incapable of comfortably accommodating more than six persons.<sup>11</sup> Operating from those cramped quarters, public affairs personnel found themselves isolated from the operations of the other agencies, who were then locating throughout the community.<sup>12</sup> In particular, being located away from state and other federal agencies contributed to the problem of conflicting information being released from various centers, introducing confusion among media personnel. A task which quickly became routine involved reconciling conflicting information from other sources.<sup>13</sup>

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5. CWO R. M. Meidt, "Public Perceptions In Spill Response," in *Proceedings of the 1991 International Oil Spill Conference* (Washington D.C.: American Petroleum Institute, 1991), 336.

6. Jensen, 420.

7. Lt. E. W. Wieliczekiewicz, interview by Lt. Comdr. R. Gaunt, Valdez, 10 Oct. 1991, no. F164, tape, FOSC Exxon Valdez Archive.

8. Meidt, 336.

9. PIAT's role in spill responses is described in the National Contingency Plan, 40 CFR 300.34, 1 July 1988 revision.

10. Wieliczekiewicz, interview, 10 Oct. 1991.

11. Jensen, 420.

12. The Valdez MSO is physically located on the periphery of the city of Valdez, a few hundred yards from what later became the "nerve center" of overall spill operations.

13. Wieliczekiewicz, interview, 10 Oct. 1991.

Media access to the news center was effectively restricted because access to the MSO itself needed to be controlled. A large number of salesmen, information seekers, and others continually sought access to the MSO offices.<sup>14</sup> The public affairs staff arranged for use of the Valdez Community Center for press briefings. Located a short walk from the MSO, it proved to be valuable as the size of the press corps grew.<sup>15</sup>

In order to address the problem of coordinating information releases with other agencies, the Coast Guard public affairs staff soon entered into an ad hoc consortium arrangement with several other federal agencies including the U.S. Department of the Interior (DOI), the U.S. Department of Defense (DOD), the Bureau of Land Management (BLM), the U.S. Department of Agriculture (USDA), and the National Oceanic and Atmospheric Administration (NOAA), to form the Federal Information Center.<sup>16</sup> The "center" was co-located with the Coast Guard's already cramped public affairs office at the MSO. In the absence of National Transportation Safety Board (NTSB) offices and staff in Valdez, the Coast Guard served that agency with public affairs assistance as well.<sup>17</sup> These groups worked to coordinate scheduling of news briefings and to smooth information dissemination.<sup>18</sup> Coast Guard public affairs officers began publishing fact sheets in an effort to keep media personnel and other interested parties apprised of the latest developments.<sup>19</sup>

Requests for information based upon the Freedom Of Information Act (FOIA) began to arrive early on.<sup>20</sup> The commandant (Information Services Division office) issued a position paper that provided guidance for personnel handling documents pertaining to the spill. Declaring that "litigation involving the Federal Government is highly likely," Coast Guard Headquarters directed strict adherence to provisions in the Coast Guard Public Affairs Manual on how such requests were to be dealt with.<sup>21</sup> Many of the sought-after documents were archived at the FOSC offices.

All FOIA requests were directed to the commandant's office and were processed by the Information Systems Division of the Office of Command, Control, and Communication (G-TIS). When directed to do so, FOSC personnel would prepare documents for G-TIS review to assure that the release neither compromised the federal government's legal position, nor constituted a violation of individual privacy.

Arguably the first days of the spill were the most difficult for public affairs personnel. Assembling a staff, setting up operations, and learning the layout and personalities involved while working long and stressful hours proved to be quite challenging. At the same time a large and demanding press corps was also arriving in Valdez and setting up its own operations.

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14. Ibid.

15. S. Skinner (DOT) and W. K. Reilly (EPA), "The Exxon Valdez Oil Spill: A Report to the President" (prepared by the National Response Team, May 1989), no. C1388, FOSC Exxon Valdez Archive.

16. Lt. E. W. Wieliczkiwicz, interview by Lt. Comdr. R. Gaunt, Dr. T. Leschine (FOSC staff), and Lt. T. Staats, Valdez, 19 July 1991, no. F163, notes, FOSC Exxon Valdez Archive.

17. Wieliczkiwicz, interview, 10 Oct. 1991.

18. Wieliczkiwicz, interview, 19 July 1991.

19. USCG, "G-MER Conference Report," as noted by Capt. D. S. Jensen.

20. 5 U.S.C. 552.

21. USCG, "Public Affairs Manual," Commandant Instruction no. M5728.2A.

Three weeks into the spill, public affairs offices were moved to office trailers at the Valdez waterfront.<sup>22</sup> Public affairs personnel found that this new arrangement created other problems, however. The new location did not provide space for other agencies. The informal "Federal Information Center," that had functioned at the MSO, thus became a casualty of the move, and other federal agencies were confronted with the difficult problem of finding spaces of their own.<sup>23</sup>

The relocated public affairs activities were still not situated close to other public affairs operations, and proximity to the FOSC had been lost as well. Public affairs personnel felt handicapped, since they now did not have immediate proximity to decisions, to new developments, or to those in key leadership positions.<sup>24</sup>

According to one Coast Guard source (who did not wish to be identified), the decision to relocate public affairs operations away from the nerve center of FOSC activities was a strategic decision. Public affairs operations were generating a general beehive of activity, attracting droves of inquisitive reporters and providing them with an excuse to be in the immediate vicinity of the command center. When public affairs was relocated a few blocks from the FOSC, therefore, although close contact for public affairs personnel was lost, others were now in a more protected environment.

The volume of activity generated by intense media interest soon made it necessary to secure the services of additional public affairs and protocol personnel. At the peak of activity, fourteen persons were directly assigned to public affairs and/or protocol duties. Of these, nine worked in Valdez, four were based in Anchorage, and one (a protocol officer) was located at Kodiak.<sup>25</sup> New hands had begun arriving in April, and, as was the case with other functions, public affairs managers soon began encountering personnel problems. These included frequent turnover and a continued need to provide orientation for newly assigned personnel. It took a new person about a week to get a feel for things, reported Wieliczkievicz. But often, in just a few days, it was already time to begin phasing out. Sometimes there wasn't even an overlap period, which might have permitted the departing individual to train his/her replacement.<sup>26</sup> The task of training the newly arrived replacement thus often fell to those who were already engaged in heavy work schedules.

Coast Guard public affairs officers provided assistance to the news community when the practice of announcing available seating on overflights at daily press briefings was initiated during the early weeks of the response. This made it possible for firsthand viewing of the cleanup by members of the media. At the same time, public affairs personnel worked to assure fair access to the information that was being disseminated to prevent favoritism, or news advantage for any one agency or network.<sup>27</sup> Reporters who elected to use Coast Guard transportation were required to pledge that information

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22. Jensen, 420.

23. Wieliczkievicz, interview, 10 Oct. 1991.

24. Jensen, 421.

25. Lt. Comdr. P. C. Olsen and Lt. T. D. Marquette, Total Billet Structure, in appendix B of "FOSC Valdez Information Flow Analysis," 29 Sept. 1989, no. C2455, FOSC Exxon Valdez Archive.

26. Wieliczkievicz, interview, 10 Oct. 1991.

27. Jensen, 423.

gathered on such trips would become "pool" information, accessible to all media. Reporters who violated these terms were denied further access to Coast Guard conveyances.<sup>28</sup>

One gains perspective on the intensity of early media interest by considering accounts of workloads and schedules of those involved in public affairs activities. Lieutenant Wieliczekiewicz, the individual appointed as public affairs officer by the first FOSC, reported that the task required eighteen hours per day for almost the first three weeks.<sup>29</sup> The Coast Guard was required to staff its news office on a twenty-four hour basis during the first few weeks of the spill, and found it possible to reduce operations (to a fourteen hour schedule) only after the introduction of stability in the overall spill response. Captain Jensen suggests that the presence of twenty-four hour continuous news networks, such as the Cable News Network (CNN), has rendered obsolete the concept of news deadlines and their associated periods of interest lull.<sup>30</sup> In addition, according to Wieliczekiewicz, eastern newspaper writers (a sizable group) dealt with a 3:00 A.M. deadline (Alaska Standard time).<sup>31</sup>

#### THE COMMANDANT'S INFLUENCE ON PUBLIC AFFAIRS

The visits that were made to the spill area by Coast Guard Commandant Admiral Paul Yost in March and April of 1989 were high-profile events. The degree of attention paid by the media to Yost's activities, and the level of credibility attached to his statements, suggests that the presence of the commandant at the scene of a crisis has a very potent public relations influence. He was perceived to be an authority capable of taking complete control and making final decisions.

Admiral Yost's arrival appeared to establish a clearer sense in the minds of media personnel that the Coast Guard was exercising leadership. It seems reasonable to hypothesize, however, that a more effective Coast Guard public affairs program, functioning early in the response, might have diminished the need to involve the commandant in order to resolve the "who's in charge" question that had repeatedly been raised in the news media.

#### MEDIA RELATIONS

A particular problem for Coast Guard leaders during 1989 was that it was extremely difficult to implant successfully positive media themes. At times, it seemed that the conditions that were being reported to the public, and those that actually existed, bore little resemblance to one another.<sup>32</sup>

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28. Wieliczekiewicz, interview, 10 Oct. 1991.

29. Lt. E. W. Wieliczekiewicz (profile sheet provided to FOSC staff during interview, 19 July 1991), no. F163, FOSC Exxon Valdez Archive.

30. Jensen, 423.

31. Wieliczekiewicz, interview, 10 Oct. 1991.

32. Vice Adm. C. Robbins, interview by Lt. Comdr. R. Gaunt, Washington, D.C., 29 Aug. 1991, no. F107, tape, FOSC Exxon Valdez Archive.

Several factors may have helped to create this situation and some Coast Guard personnel may have approached media relationships with a degree of naiveté. A study by Rappaport, Zincone, and Fricke (of media coverage following the *Argo Merchant* spill) contends that the media tends to exaggerate the damage when a spill takes place, and that reports distort the true conditions found in the field.<sup>33</sup> Newspapers place a heavy emphasis upon themes of environmental and economic damage. In addition, heavy doses of negative information are generated. A pattern of excited and emotional language tends to develop within a few days of a spill event, with “catastrophe” and “major disaster” themes being employed in ways that arouse readers and ensure engaging their attention and emotions. The findings suggest that desires for more positive reporting of news coming from the *Exxon Valdez* response may have been unrealistic. News reports simply followed predictable patterns that had been observed before, and that should have been anticipated by those working with the media.

A specific example of media-related frustrations faced by Coast Guard personnel is observed in the following account: A Coast Guard officer had just completed an overflight of the sound. Upon return, he and other passengers were asked by reporters what they had seen. The flight had been encouraging, reported the Coast Guard observer, as little floating oil was sighted during the entire trip. Not so, claimed another passenger, who had been aboard the same flight. He had seen “lots of oil.” Thus reporters hurried to record the observations of the dissenting party. In the process, of course, the credibility of the highly qualified Coast Guard officer had been challenged, and controversy had been introduced into what should have been a routine situation.<sup>34</sup> Following this incident, the Coast Guard spokesman met with the second observer to compare notes:

“What oil experience do you have, what’s your background?” asked the Coast Guard officer.

“I’m a laboratory biologist,” was the reply.

“How many oil spills have you been out on?”

“None.”

“None?”

“No, but I’ve seen oil in my driveway,” was the answer.<sup>35</sup>

In another instance, a Coast Guard monitor reported that a news photographer from a major daily newspaper, upon locating the remains of a dead sea otter, moved the carcass to an area where oil was visible, apparently to provide a more dramatic picture.<sup>36</sup>

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33. A. Rappaport, L. Zincone, and P. Fricke, “The Media and Oil Spills: Does the Press Influence Damage Perceptions?” in *Proceedings of the 1981 International Oil Spill Conference* (Washington, D.C.: American Petroleum Institute, 1981), 707–712.

34. Comdr. S. McCall, interview by Lt. T. Staats, Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt and Lt. Comdr. H. Young, Anchorage, 29 July 1991, no. F111, tape, FOSC Exxon Valdez Archive.

35. Ibid. The dialogue was paraphrased by Comdr. McCall in the interview.

36. Comdr. G. A. Reiter, memorandum to chief of staff (report from site KN-500, 23 Mar. 1990), no. W667, FOSC Exxon Valdez Archive. BM1 Hemker statement of this incident is attached to the memorandum.

Referring to 1989 response activities in Alaska, Admiral Robbins reported:

In many ways the media distorted what was going on up there. I think that they tended to zero in on the worst beaches. In Prince William Sound we had only 10 percent of the beaches with oil on them, so it wasn't a big amount. It was still 300 miles or so, but it was still only 10 percent of all the beaches. It got blown out [of proportion] to where people began to think that instead of 10 percent we had 90 percent. When I came down afterwards...people would say 'Hey the whole world is covered with oil up there,...how bad is it?' I told them...they had a completely mistaken impression from what they read in the press, because that is indeed what they saw and that's what makes news.<sup>37</sup>

Admiral Robbins summed up his experiences with the media by declaring:

I guess that one of my biggest disappointments was the press. I came to the realization that what people had said for many years was true. They're in business to make money. They work very hard to put things in the paper that sell newsprint. Things that are non-controversial...don't get printed. Every reporter wants to...stand out and the best way to do that is to produce controversy. That's disappointing, they're not reporting necessarily the facts.<sup>38</sup>

The *Exxon Valdez* incident may also have been regarded as a "golden opportunity" for advocates of new legislation governing the oil industry. The spill dramatized the need for congressional attention to the environmental problems associated with oil development and transport. Focusing on the most negative aspects of the incident, therefore, was perhaps seen as a tactic to create public pressure for reform. Subscribers to this view point to the unanimous passage of the Oil Pollution Act of 1990, a sweeping change in response procedures, and to the shelving of plans to open new areas for oil exploration, particularly the Arctic National Wildlife Refuge.

*Media relations strategies of Exxon and the state of Alaska.* The grounding of the *Exxon Valdez* resulted in intensive public relations efforts by several of the entities involved in the response. Exxon brought public relations officers to Valdez immediately after the spill. Exxon came eventually to rely on a strategy of getting out reports on how many people were working, how many miles of beach were being cleaned, and how much boom was being employed. The Alaska Department of Environmental Conservation (ADEC) would often respond by pointing to very specific "realities" such as handfuls of oily matter from still-contaminated beaches. "They had numbers, we had images," according to Ernie Piper, an aide to the governor.<sup>39</sup>

Alaska DEC Commissioner Dennis Kelso recognized that his agency needed to score the media images in the early days as much and as often as they could, according to Piper. The Alaska Department of Conservation felt it could not hope to match Exxon's efforts in the long run.<sup>40</sup> Kelso proved to be most adept in media dealings, displaying a

37. Robbins, interview, 29 Aug. 1991.

38. Rear Adm. D. E. Ciancaglini and Vice Adm. C. Robbins, interview by Dr. T. Leschine (FOSC staff), Comdr. D. Maguire, Anchorage, and Lt. Comdr. R. Gaunt, 10 Sept. 1991, no. F106, tape, FOSC Exxon Valdez Archive.

39. G. Frost, "Putting a Spin on the Spill," *Anchorage Daily News*, 27 Mar. 1990, sec. A.

40. E. Piper (ADEC), telephone conversation with Lt. Comdr. R. Gaunt, Anchorage, 15 Jan. 1992, no. F765, notes, FOSC Exxon Valdez Archive. What state officials feared, according to Ernie Piper, was that Exxon commanded far greater resources than those available to Alaskan agencies. Public opinion, therefore, was considered as the best weapon with

particular flair for delivering short sentences that played well on television broadcasts. On 26 March, for example, he reported that: "Forty-eight hours into this spill there is still not an adequate response. That is unacceptable."<sup>41</sup> Such brief statements were hard-hitting, to-the-point, and lent themselves to easy insertion into prime-hour news reports.

From ADEC's perspective, Exxon's strategy included accusations that "bureaucrats" had stalled the use of cleanup measures that otherwise might have diminished the effects of the spill.<sup>42</sup> The first reports that state officials had blocked application of dispersants "mystified" the governor and his staff, according to Piper. When Andy Spear (a former ADEC official) suggested that, in the *Amoco Cadiz* case (France, 1978), a judge reduced damages against Amoco when it was pointed out that the government had not permitted the immediate use of dispersants, "suddenly the light went on," he said.<sup>43</sup>

"[Governor] Cowper was very angry. This wasn't two contrasting interpretations of an incident. This was entirely fabricated...for a specific litigation reason, not because it was based on the public record," said Piper. Governor Cowper's press secretary, David Ramseur, then declared, "Whether we like it or not, we've been pulled into a public relations battle here and we'll have to play in it or get killed."<sup>44</sup> Thus, the foundations for a sometimes bitter public relations confrontation were in place.

Exxon sought to provide assurances that things were progressing well in the cleanup.<sup>45</sup> Such claims, however, were often quickly disputed by state spokespersons. If Exxon reported that significant progress had been made in a certain area, state authorities would respond with claims that their sources did not agree.<sup>46</sup> In one case, Exxon's Don Cornett announced that a sizable number of skimmers had been assigned to a particularly heavily impacted area. State officials pressed a dispute of those claims. Finally, a reporter from *Time* magazine was taken on a helicopter trip into the field for firsthand resolution of the matter.<sup>47</sup> Upon return, the reporter was able to provide assurances to his colleagues that Exxon's claims were indeed accurate. The verification-of-information process used in this case could, for obvious reasons, not be used to resolve each similar dispute that arose.

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which to "fight" for state interests. Indeed, Exxon did engage major public affairs assistance from influential agencies such as Jack Hilton, Inc., a New York public relations counseling firm.

41. Ohio State University School of Journalism, "News Coverage of the Exxon Valdez Oil Spill: Summary of Information From Surveys of Reporters and Sources," photocopy, no. F299, FOSC Exxon Valdez Archive.

42. P-I News Services, "Exxon Needs Twice as Many Cleaners, Congress Told," *Seattle Post-Intelligencer*, 9 May 1989, sec. A.

43. Frost, 27 Mar. 1990.

44. Ibid.

45. Although it was sometimes alleged that Exxon officials were initially over-optimistic that the spill could be quickly brought under control, early statements in media accounts indicated that Exxon spokesmen Frank Iarossi and Don Cornett recognized that the response would require substantial amounts of time and money.

46. Rear Adm. D. E. Ciancaglini, interview by Lt. Comdr. R. Gaunt, Anchorage, 11 Feb. 1992, no. F682, tape, FOSC Exxon Valdez Archive. Adm. Ciancaglini had very strong views on what he regarded as a deliberate campaign by the state to impede the cleanup and to use the news media to further that aim:

"It sounds like we're badmouthing the state of Alaska, and possibly overdoing it. I assure you we're not. It was a thousand times worse. Things were very bad...things were very, very bad. Cleanup of the spill was easy. The problem was trying to get the state to cooperate and stop sending out misinformation and to work with us to clean up their land. They fought us. Just to fight us, at times. Just to do it, to raise obstacles, road blocks."

47. B. Dietrich, "An Exxon Coordinator Finds 'Credibility is Everything'," *The Seattle Times*, 11 Apr. 1989.

Alaska DEC's general posture regarding the cleanup emphasized several themes. Initially, there were demands for prompt response action along with substantial amounts of criticism based upon what was viewed as a slow start. Later, beginning in late April, there were charges that Exxon's cleanup efforts were less than adequate, and that a substantially expanded effort was needed. When Exxon suggested that natural cleansing, through wave action, would probably play an important role in the cleanup, state authorities interpreted this as an indication of lack of commitment to the cleanup task. "I think there is an element of unwillingness to redress the injury," charged an Alaska Division of Emergency Services official.<sup>48</sup>

As the summer months passed, state criticism turned to themes emphasizing that the spill had not been cleaned up to the satisfaction of the governor and his staff. Governor Cowper stated strongly that Exxon must stay on the job until it was done.<sup>49</sup> That refrain later took the form of demands for assurances that Exxon would return to continue the cleanup in 1990. In May of 1990, Governor Cowper said, "Last summer we often had to rely on confrontational press in order to generate any kind of action."<sup>50</sup>

Exxon demanded that fishermen, with whom it had contracted, refrain from discussing the spill with news personnel.<sup>51</sup> Bill Dietrich of *The Seattle Times* noted that Exxon authorities were very accessible at first, but were less available as the response progressed.<sup>52</sup> Others suggested that reporters began to encounter greater problems in gaining access to spill-related information when lawyers from Exxon, the state of Alaska, and the federal government specified close-to-the-vest policies for the handling of such information.<sup>53</sup>

Exxon was successful, according to Ernie Piper, in portraying the spill as an "actuarial" event rather than an environmental disaster. This strategy emphasized how much was being spent, benefits accruing to Alaskans because of high wages and other spending, the size of the cleanup effort, and the complexities of the response. The state, in the meantime, continued to stress themes related to the ecological consequences of the disaster. State authorities produced video news items that were distributed free to dozens of television stations. These materials often included views of oiled wildlife, impacted beaches, and scenes from native villages.<sup>54</sup> The idea, apparently, was to continue to press the point that things were not substantially improved, and that Alaskan authorities did not share the view that the cleanup was a success.

State authorities felt that keeping the spill before the public's attention represented their best hope of ensuring that the cleanup would be continued. Commissioner Kelso was an articulate spokesman who often met reporters dressed in the attire of an

48. P. Weurpel (Alaska Division of Emergency Services), "Arrogance: Exxon's New Plan is Criticized," *The Seattle Times*, 2 May 1989, sec. A.

49. G. Sikorski, "Exxon Slips Away," *The New York Times*, 7 Sept. 1989, sec. A.

50. Associated Press, "State OKs Fertilizer For Cleanup of Beaches," *Fairbanks Daily News-Miner*, 2 May 1990.

51. P. Lewis, "Exxon's Words to Fishermen: Keep Quiet," *The Seattle Times*, 7 Apr. 1989, sec. A. A clause in the contract handed to fishermen whose boats were chartered for spill response work included wording with such provisions.

52. Ohio State University, School of Journalism, "News Coverage of the Exxon Valdez Spill: Summary of Information From Surveys of Reporters and Sources."

53. Frost, 27 Mar. 1990.

54. Ibid.



Alaskan outdoorsman. He projected an image of believability that seemed to be accepted by members of the media and the public. In their ability to sustain efforts to keep the environmental consequences of the spill before the public, Kelso and his staff, it might be argued, were very successful. Governor Cowper meanwhile kept away from most of the day-to-day infighting. This was considered necessary so that the governor might serve effectively as a spokesman for the state when it became necessary to engage the fullest authority the state could muster.<sup>55</sup>

In seeming corroboration of Mr. Piper's views on Exxon's approach to information dissemination, Exxon's general manager, Otto Harrison, later stated:

Our press releases tended to be oriented towards some event or completion of some effort or initiation of some effort....That's the focus on which we work. We did not try to resolve issues with the Coast Guard or with the State, or with any other federal body through the media.<sup>56</sup>

It seemed, however, that the public came to regard the spill as a confrontation between forces of good and evil. Bryan Hodgson, a senior editor of *National Geographic* who covered the spill, observed, "In Alaska, Exxon was the villain, and that was enough for most."<sup>57</sup>

All this left the Coast Guard in a most uncomfortable position. If a decision made by the FOSC supported Exxon's position in a controversy, there was a risk that the Coast Guard would be seen as being "too cozy" with the oil industry. It frequently became the target of just such criticism.

#### PUBLIC AFFAIRS AND THE LOCAL COMMUNITY

In the view of some, keeping local people apprised of what was transpiring in the response, and what might be expected to occur in the future, should have been a higher Coast Guard public affairs priority. According to Valdez Mayor Lynn Crystal, the city government was "out of the information loop" during the early days of the spill. Although citizen anxiety levels were very high, and many within the community were looking to local leaders for information, Valdez officials felt they had to rely primarily on what they could learn from conventional media sources.<sup>58</sup> (The need for improved information flow to the affected communities has apparently been addressed by the recently formed Prince William Sound Regional Citizen's Advisory Council [RCAC].)<sup>59</sup> While more might have been done to directly involve local leaders, it has also been

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55. E. Piper (ADEC), interview by Lt. Comdr. R. Gaunt and Dr. T. Leschine (FOSC staff), Anchorage, 15 July 1992, no. F663, tape, FOSC Exxon Valdez Archive.

56. O. Harrison (Exxon), interview by Lt. Comdr. R. Gaunt, Dr. T. Leschine (FOSC staff), and A. van Emmerik (FOSC staff), Anchorage, 24 June 1992, no. F670, tape, FOSC Exxon Valdez Archive.

57. Ohio State University, School of Journalism, "News Coverage of the Exxon Valdez Spill: Summary of Information From Surveys of Reporters and Sources."

58. L. Crystal (mayor of Valdez, Alaska), interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, Valdez, 18 July 1991, no. F175, notes, FOSC Exxon Valdez Archive.

59. The RCAC is a broad-based organization with substantial citizen involvement. The Prince William Sound RCAC came into existence as a local initiative following the spill. It now enjoys formal enfranchisement and financial support as a result of the passage of the Oil Pollution Act of 1990.

noted that Valdez community representatives seldom attended the nightly public news briefings held there during 1989.<sup>60</sup>

The stabilization of cleanup activities during the late summer months in 1989 permitted the public affairs office to organize and conduct tours for leaders from the area's communities. These took place on 5, 29, and 31 August 1989. Participants were given a firsthand look at the condition of shorelines, in hopes that this would provide convincing evidence that progress was being made in the cleanup.<sup>61</sup>

A member of the Coast Guard Public Affairs Information Team later observed:

Of as much importance as the news office, will be the community relations program. It is this part of the response that works directly to overcome fear of the unexpected by those groups affected by the incident. The extent to which the community demands involvement was clearly seen, when, as *Newsweek* reported, "Angry fishermen who saw their livelihoods being choked...turned press conferences into town meetings".<sup>62</sup>

#### PHOTOGRAPHIC RECORD OF THE SPILL

The photographic record of the spill response appears to have been a particular weakness of the Coast Guard's public affairs program. One USCG Headquarters Marine Environmental Response Division (G-MER) conference discussant noted, "We sent a lot of photographers up there and got pictures of people instead of beaches and operations." "I told my photographer specifically what we wanted and still didn't get it," reported another. A lack of training was cited as the chief cause.<sup>63</sup>

Within materials held by the FOSC there remain (at the time of this writing) hundreds of slides and photos that are of limited use since they carry no specific identity. As a result, these images must be classified simply as "generic photographs." Missing is a means of determining who and/or what was depicted, when and where the photograph was taken, and information about the significance of the event. Photographers appear to have interpreted their job as simply to "take pictures." Recording the data that would have permitted identification was viewed as "somebody else's job." No one seems to have made mandatory the task of requiring documentation for all photographs that were taken.

During the winter of 1990-91 a petty officer was assigned the task of trying to identify undocumented pictures in the FOSC holdings. Although consuming a considerable amount of time, the effort resulted in successful documentation of only a small portion of the total.

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60. Vice Adm. C. Robbins (comments on draft of this chapter, 10 Dec. 1992), no. F767, FOSC Exxon Valdez Archive.

61. USCG, "Selected Distinguished Visitors to FOSC" (compiled by Lt. T. Staats for period from Apr.-Sept. 1989), no. F678, FOSC Exxon Valdez Archive.

62. Meidt, 335.

63. USCG, Difficulty in Documenting Key OSC Actions, in "G-MER Conference Report," ch. 7, sec. 4.

## 1989 PUBLIC AFFAIRS ACTIVITIES SUMMARIZED

In summary, the Coast Guard's public affairs program faced several significant problems. Facilities were less than desirable, and the efforts of qualified and trained personnel were diluted by others with limited backgrounds. Prior planning had not included preparations for a disaster of the magnitude of the *Exxon Valdez* incident. Public affairs personnel tried to make the best of the situation, but planning evolved in an ad hoc manner as the public affairs program developed. Careful planning might have made clearer just what it was that public affairs was supposed to be accomplishing during the response, what strategies were best for carrying out that mission, and what resources were necessary to cope with the media-related demands of the *Exxon Valdez* spill.

Finally, the public affairs program too often found itself in the midst of confrontational situations. Attempting to establish "the truth," or which were the "real" figures in the face of conflicting information from multiple sources, occupied substantial amounts of attention. Often the task was to help sort out confusion, to issue denials, or to help correct mistaken beliefs. Surprise announcements made by other agencies, without having first consulted with the Coast Guard, occurred frequently. Some agencies never accepted the premise that there should be cooperation in the release of information by issuing it jointly. Such circumstances often forced Coast Guard personnel into a defensive posture, making it extremely difficult to generate a positive public affairs program.

A communication was received at U.S. Coast Guard Headquarters, in April 1989, that expressed National Broadcast Corporation's (NBC) appreciation and thanks for the work done during those early days by Coast Guard public affairs personnel. "The information flow from the U.S. Coast Guard was fast, accurate, and useful despite the enormous workload and long hours," wrote NBC news producer Arthur A. Lord. "My personal and professional thanks to all involved."<sup>64</sup> Lord's comments provide evidence that, despite all of the problems faced in organizing and maintaining a Coast Guard public affairs program, some members of the news community noted and appreciated the work being done in Valdez.

*Impediments to effective public affairs operations in 1989.* Leaders in the spill response, including some who were directly involved in public affairs activities, identified an assortment of problems that hampered Coast Guard public affairs operations in Valdez at the December 1989 Coast Guard-sponsored debriefing conference:

(1) The Coast Guard, according to an operations officer, began the response with an underfunded and understaffed public affairs operation.<sup>65</sup> Because the program had a shortage of experienced, professional public relations personnel who could be detailed to Valdez, the personnel to fill public affairs roles had to be recruited wherever they could be found. As a result, the mix of public affairs personnel consisted of some with

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64. A. A. Lord (NBC), letter to Capt. R. Peterson, 18 Apr. 1989, no. C541, FOSC Exxon Valdez Archive.

65. USCG, Need to Overcome Organizational Inertia, in "G-MER Conference Report," ch. 9, sec. 1.

substantial backgrounds and others who had little experience. The shortage of well-prepared public affairs personnel lead to the recommendation that the Coast Guard make a priority of funding and training that would improve its public affairs capabilities.<sup>66</sup> Lack of stability, caused by the ever-changing staff roster, also hindered establishing an effective public affairs program.

(2) Diffusion of the various public relations enterprises into disparate locations around Valdez made the task of coordinating press releases and information all but impossible.<sup>67</sup> In mid-April, for example, news reporters were told by Exxon that it was recovering 96,600 gallons of oil daily. But on the same date, a Coast Guard "fact sheet" placed the total at 42,000 gallons.<sup>68</sup> Such substantial differences in reported production counts doubtless did little to solidify media confidence in the official information reporting system. A more desirable arrangement would have been a centralized news center, where information being processed by different entities could have been cross-checked for validity and consistency before release to the media.

(3) The city of Valdez had many limitations that made it a very difficult place from which to organize a major public affairs undertaking. Besides the office space limitations that have been discussed, a number of other small-city considerations impacted upon public affairs efforts. For example, the capabilities of the local telephone systems were far outstripped by the demands of the flood of new arrivals, many of whom were news media personnel. One day during the first week of the spill, local trunk lines were unable to process some seven thousand incoming or outgoing calls. It was often necessary to wait for hours for a line that would connect one with the outside world. The telephone problem was exacerbated when some media personnel began utilizing a tactic of keeping a phone line open, sometimes for several hours, until there was more news to report. Public affairs personnel also employed creative telephone maneuvers to confer with U.S. Coast Guard Headquarters, including use of such circuitous routings of calls as via Tokyo or London.<sup>69</sup>

The remoteness of Valdez forced media personnel to cope with other handicaps uncommon for those within the profession. The town had very limited film processing capabilities for example. It was often necessary to wait for days to secure the return of photographs, which by that time represented "old news." The processing of slides had to be done in Anchorage, generally resulting in a two- to three-day turnaround.<sup>70</sup> In addition, it was difficult for public affairs personnel to stay abreast of what was being said in the "outside" press about the spill. When seeking to secure the morning newspaper in Valdez, one soon learns that the variety of options is very limited.<sup>71</sup>

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66. USCG, Need for a Public Affairs Plan, in "G-MER Conference Report," ch. 9, sec. 2.

67. USCG, "G-MER Conference Report" (notes from day three of the conference). Comments made by Capt. J. L. Crowe.

68. B. Dietrich, "A Not So Slick Bureaucracy," *The Seattle Times*, 11 Apr. 1989.

69. Wielicziewicz, interview, 10 Oct. 1991.

70. Wielicziewicz, interview, 19 July 1991.

71. Weather permitting, the two Anchorage newspapers then being published were available in Valdez. The *Valdez Vanguard*, a weekly journal, is the only other publication which is normally available in the community.

(4) Normally, organizations whose nature requires occasional major public affairs undertakings develop in advance a general plan to govern those activities. The plan becomes the basis for what is to be accomplished by public affairs personnel, influencing the strategies and tactics that will be employed when it becomes necessary to activate public affairs operations. The Coast Guard, in the view of the debriefing conference participants, lacked a public affairs plan of sufficient scope to cover a spill of the significance and level of interest of the grounding of the *Exxon Valdez*.<sup>72</sup> What evolved, therefore, was a series of ad hoc actions based upon what the public affairs personnel *thought* they ought to be doing, rather than a pre-existing set of rules governing the conduct of operations.

(5) Coast Guard public affairs efforts lacked a single spokesperson. Likening the public affairs project to the president's need to deal through a spokesman upon occasion, Captain Jensen noted that a single individual (Marlin Fitzwater, at the time) speaks on behalf of the chief executive. The system works because Fitzwater is known to the press corps, and because there are no staff spokesmen making contradictory or inconsistent statements. He has furthermore occupied the position for some time, and his tenure has not been interrupted by frequent stand-ins or replacements. The Coast Guard, in Jensen's view, should adopt a similar strategy in its public relations dealings, especially when high-profile information is involved.<sup>73</sup> Instead, the frequently changing (due to rotations) cast of official spokesmen in 1989 led the media to sense instability in the Coast Guard.

## PROTOCOL

The job of the protocol staff is planning and logistics for important visitors, and escorting high ranking governmental officials and other dignitaries who came as visitors to the spill area.<sup>74</sup> In 1989, over 450 guests, including visiting governmental officials, staff members, and others came to the offices of the FOSC and received protocol staff services (figure 21.1).<sup>75</sup> Dignitary (VIP) visits create excellent opportunities for the Coast Guard to display the progress being made and to provide assurances that the cleanup was being managed effectively. When those receiving that message are influential leaders who in turn carry positive reports to others in high places, the task of well planned VIP accommodation may be seen as an opportunity for the Coast Guard to score valuable points.

## LIMITATIONS FACED IN PROTOCOL OPERATIONS

As with so many other aspects of the *Exxon Valdez* spill, carrying out the protocol mission was not an easy task. Large numbers of persons wanted to visit the area, but shortages of accommodations in Valdez, as well as a scarcity of transportation for observational flights, necessitated limits on such visits. The FOSC found it necessary to

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72. USCG, "G-MER Conference Report," ch. 9, sec. 2.

73. Jensen, 421.

74. Jensen, 420.

75. The number of visitors was calculated from FOSC records, and is less than the true number. This is due to incomplete records for the period prior to 12 Apr. 1989.

establish a policy that restricted visits to those who had "reasonable need" to observe the operations, and to limit the length of such visits.<sup>76</sup>

The VIP visits, though acknowledged to be "part of the job," tended to have a negative impact upon other operations, in the view of some who were directly involved.<sup>77</sup> The presence of VIPs often necessitated the full-time attention of key personnel who otherwise would have been occupied elsewhere. In addition, the diversion of equipment (helicopters, for example) meant that it was not available for other operations. "I never saw a case where operations didn't yield to the needs of VIPs," stated one G-MER conference attendee.<sup>78</sup> In one case, protocol staff discovered belatedly that a particular party of visitors involved a total of forty persons, including family members. Each expected to tour the area, and each was eventually accommodated, but at considerable diversion of resources from other tasks.<sup>79</sup>

Although VIP visits placed burdens upon equipment, consumed large amounts of time for spill managers and presented a continuous challenge for the protocol staff, the need to accommodate such activities appears to have been a generally accepted fact. "VIPs and the press are part of the job, and you have to have resources dedicated to that [task]," acknowledged one conference speaker.<sup>80</sup>

The taxing of transportation resources as a result of heavy VIP traffic brought suggestions that dedicated equipment ought to have been set aside specifically for the purpose of accommodating the needs of visiting dignitaries. "You're much better off to have your [transportation] support personnel sitting around for a couple of days in a month," offered one observer, "than to have to cut other operations short because you didn't plan for the visitors."<sup>81</sup>

#### WORKING WITH OTHER PROTOCOL AGENCIES

Arrangements were made to streamline the planning of VIP visits. An informal network was established among protocol officers on the FOSC's staff, those at Elmendorf Air Force Base (in Anchorage), Coast Guard congressional liaison officers (at U.S. Coast Guard Headquarters), and various congressional/military staff aides. Through this network, planning and agenda development took place, thus facilitating tours that were closely focused upon the specific purposes of the visit.<sup>82</sup> The efforts of U.S. Air Force protocol personnel in particular were often praised by Coast Guard spokesmen.<sup>83</sup>

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76. Jensen, 423.

77. USCG, "G-MER Conference Report" (notes from day three of the conference). Comments made by Capt. D. S. Jensen.

78. USCG, VIP Workload, in "G-MER Conference Report," ch. 9, sec. 6.

79. Ibid. The specific group is not identified, but the incident was reported at the G-MER Conference.

80. USCG, "G-MER Conference Report" (notes from day one of the conference).

81. USCG, VIP Workload, in "G-MER Conference Report," ch. 9, sec. 6.

82. Jensen, 423.

83. Favorable comments about U.S. Air Force protocol and the quantity and quality of help which was received from those sources is a recurring theme in comments made by Coast Guard cleanup managers. One spokesman, in fact, lamented that obtaining "Air Force quality" public relations is a goal which the Coast Guard probably cannot aspire to.

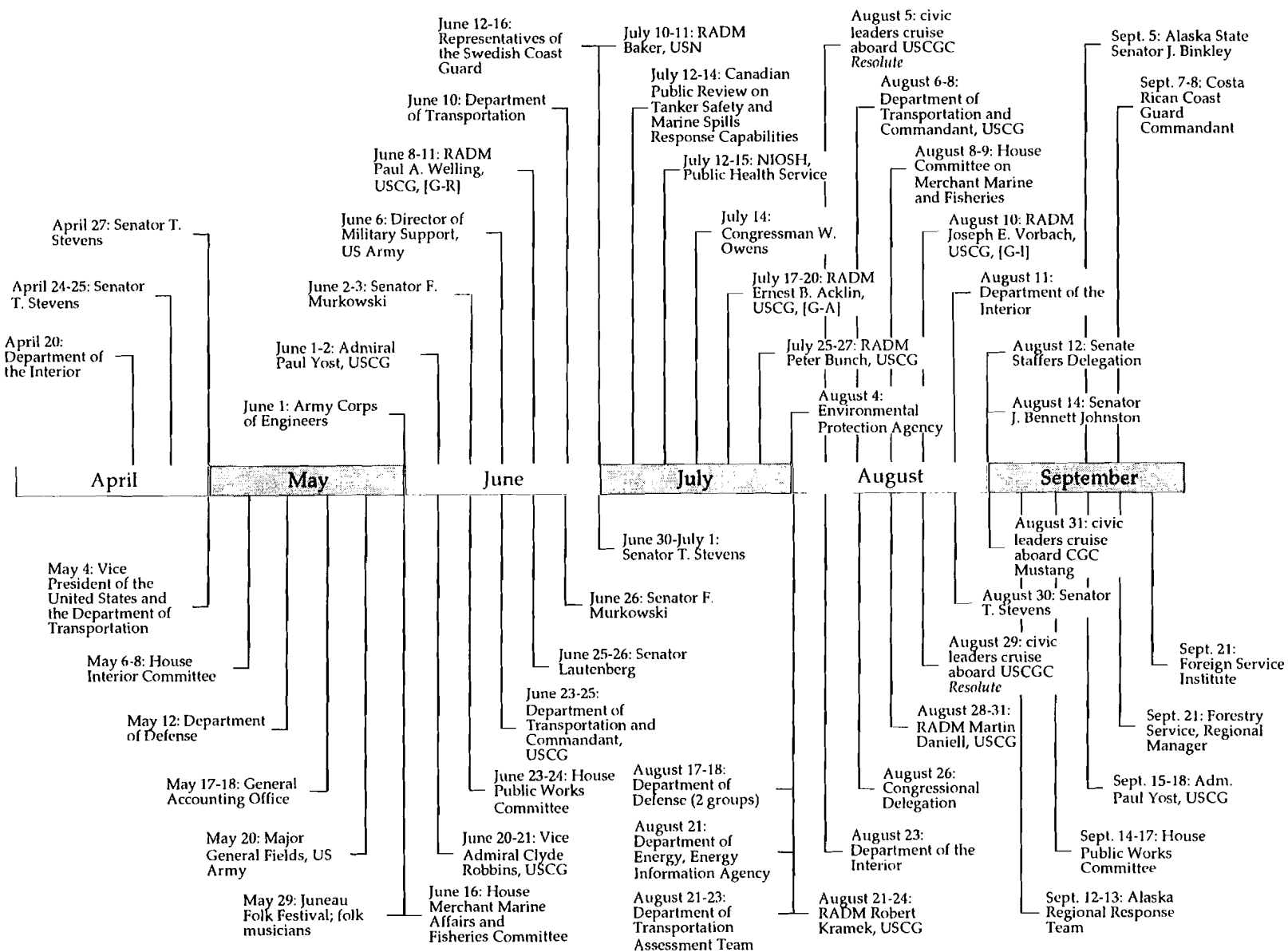


Figure 21.1. VIP visits timeline for 1989.  
Source: Lt. T. Staats, "Selected Distinguished Visitors to FOSC."

## THE VICE PRESIDENT'S VISIT

The single largest undertaking for Coast Guard protocol personnel during 1989 doubtless was the visit made by Vice President Quayle on 4 May. A party of forty-five persons spent approximately six hours in the spill area, requiring the most demanding set of preparations faced by the protocol staff.<sup>84</sup>

Preparations began a week before the actual visit, as contact with officials in Washington began. When Secret Service personnel arrived, three days before the visit, preparations intensified. A moment-by-moment agenda was developed with contingencies addressed in minute detail. On the day before the visit a full rehearsal involving all participating personnel took place.<sup>85</sup>

On 4 May, the vice presidential party arrived at Cordova aboard *Air Force II*. They were then transported across Prince William Sound on a forty-minute flight that involved four helicopters. During the visit the vice president and his party were accompanied by Department of Transportation Secretary Skinner, the Coast Guard Commandant, Admiral Yost, and Rear Admiral Ciancaglini.<sup>86</sup> After landing on the USS *Juneau*, the party was ferried to Smith Island where a wooden platform had been constructed to permit observation of cleanup operations. In addition to the official party, a large press corps was on hand to record the event.<sup>87</sup>

The party was then returned to the USS *Juneau*, moved by helicopter back to Cordova, and flown to Anchorage via Coast Guard C-130 aircraft. At Anchorage, the vice president met briefly (at Elmendorf AFB) with the press. *Air Force II* had been flown from Cordova to Anchorage, refueled, and was waiting for the official party, and the return flight.<sup>88</sup>

The vice president's visit "brought things to a standstill for about two days," according to one official.<sup>89</sup> There is evidence, however, that the visit provided a substantial morale boost for those engaged in the dirty and cheerless task of shoreline cleanup. One observer told of disappointment among the workers when it appeared that conditions might not permit a landing in the Smith Island area. When the actual arrival took place, however, and the vice president shook hands with cleanup workers and spoke words of encouragement; the spirits of those present were substantially lifted.<sup>90</sup>

The official Coast Guard record of the vice presidential visit is not complete. The public affairs/protocol staff concentrated on assuring that events worked smoothly and the single staff member assigned to the entourage had only protocol responsibilities.<sup>91</sup>

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84. Jensen, 424.

85. Ibid.

86. Daily News Staff and Wire Reports, "Quayle Says Exxon Should Do More," *Anchorage Daily News*, 5 May 1989.

87. Jensen, 424.

88. Ibid.

89. USCG, "G-MER Conference Report" (notes from day four of the conference). Comments made by Capt. D. S. Jensen.

90. C. Wohlforth, "Quayle's Visit Alters Cleanup Drill," *Anchorage Daily News*, 6 May 1989.

91. McKinley, telephone conversation, 24 Jan. 1992, no. F827, FOSC Exxon Valdez Archive.



Nothing was produced by the Coast Guard that documented the details of the visit, including the remarks made by the vice president at the work site he visited.

#### PUBLIC AFFAIRS/PROTOCOL ISSUES AFTER 1989

As response operations slowed with the coming of the 1989–90 winter months, there was an attendant reduction in media interest and in protocol activities. The FOSC public relations and protocol staff during the winter period, consisted of one junior-grade officer, with occasional support from the administrative pool.<sup>92</sup> Work consisted largely of responding to inquiries, via mail and telephone, some of which were from members of the media seeking updates on plans for the forthcoming summer. Newspaper coverage of Captain Joseph Hazelwood's trial (which took place in Anchorage) helped keep the *Exxon Valdez* incident alive in the press, and undoubtedly inspired a portion of the public affairs inquiry traffic handled during the period.

The 1990 response effort was characterized by changing attitudes and sometimes sharply diverging views among the response organizations. In 1989 a crisis had existed. Hence it was often considered appropriate to relax normal operating standards to permit the taking of emergency response measures. The Coast Guard, for example, had initially eased vessel licensing standards to permit the rapid deployment of the many vessels that were procured for the cleanup.<sup>93</sup> As 1990 arrived, however, that situation had changed. Most agencies now took the position that the "emergency" phase was over, and as a result, normal, or more rigid, rules would have to be observed.<sup>94</sup>

One of Anchorage's two daily newspapers (the *Anchorage Daily News*) had been particularly critical of cleanup efforts during 1989. Admiral Ciancaglini came to believe that the paper deliberately misled the public by writing articles from a highly slanted perspective. He felt furthermore that the most controversial and misleading articles appearing in the *Daily News* were often directly and deliberately encouraged by ADEC spokesmen.<sup>95</sup> He found himself increasingly caught up in addressing what he felt were misrepresentations that had been implanted by the *Anchorage Daily News*.

Several incidents occurring before the 1990 summer cleanup began provided indications that relations with the state, which had frequently been difficult in 1989, would continue to be tense during the coming season as well. At a March meeting of the Operations Steering Committee, ADEC Commissioner Kelso produced the carcass of a dead bald eagle. Earlier in the meeting an Exxon spokesman had reported that there had been substantial improvement in response area conditions during the winter

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92. USCG, FOSC Billet Structure, in of "FOSC Exxon Valdez Winterplan 1989–90," appendix 1, 1 Nov. 1989, no. W102, FOSC Exxon Valdez Archive.

93. Comdr. S. McCall, letter to F. Jarossi (Exxon), 1 Apr. 1989, no. C665, FOSC Exxon Valdez Archive. This communication authorized the easing of vessel certification and vessel operator standards. A total of 119 vessels were given special dispensations in 1989. Waivers were also permitted from Jones Act requirements (which pertain to vessels under foreign flag).

94. Capt. R. J. Asaro, letter to O. Harrison (Exxon), 30 Aug. 1989, no. C934, FOSC Exxon Valdez Archive. This communication informed Exxon that use of non-permitted and non-certified vessels would no longer be authorized after 15 Sept. 1989. This is an example, but other agencies also terminated special arrangements which were permitted during the crisis mode.

95. Ciancaglini, interview, 11 Feb. 1992.

months. Commissioner Kelso's tactic was seen as an attempt to dramatize his disagreement with Exxon's positive portrayals. (Kelso later admitted that he had no proof that the eagle in question had perished as a result of spill contamination.)<sup>96</sup>

Just two days later Governor Cowper announced that the state's "preliminary biological studies show(ed) heavy damage on fish in Prince William Sound," and that oiled shorelines were "too far gone" for anything less than a heavy duty summer cleanup.<sup>97</sup> Cowper's statements were interpreted as taking issue with cleanup plans that had been proposed by Exxon and which were being considered (at that time) by the FOSC.

Admiral Yost responded to Governor Cowper's allegations by reporting that he had "doubt whether such [salmon and herring] data exists," and that "if it does exist, it should have surfaced way before now." Admiral Yost also reaffirmed that the FOSC would set standards for the cleanup. Commissioner Kelso, in the meantime, took the position that the cleanup should be "based on state laws, regulations and standards."<sup>98</sup> Kelso's remarks, and others that he would make at various times through the summer, provided indications that state authorities continued to view cleanup decision-making as a state's rights' question, and that they had not accepted the FOSC as the preeminent authority in the response. In addition, the public airing of these differences meant that the news media would again become a field of engagement in the war to win over public opinion.

Early in April, it was announced that Randy Bayliss (head of "Enviropimp," a Juneau-based environmental consulting firm) had been named as state On Scene Coordinator (OSC) for the *Exxon Valdez* oil spill. Bayliss declared that, "I tend to be confrontational, and there is nothing wrong with confrontation." Described as a "maverick," Bayliss was seen as being representative of the "old guard," someone who could exercise great influence over the many newcomers in ADEC's response team.<sup>99</sup> The state had thus emplaced a key player who seemed prepared to engage other agencies in an adversarial manner.

These developments set into perspective the situation that was faced by the FOSC as the second year of the response effort began.

#### THE COAST GUARD MEDIA RELATIONS STRATEGY FOR 1990

The Coast Guard approached the 1990 cleanup season with a cautious attitude about media relations. It was presupposed that there would be active media interest with special attention focused on how the shorelines looked following the winter period, what was to be done about the remaining oil, and the matter of "who was in charge." The summer media plan called to "project a businesslike, non-inflammatory image of both cleanup requirements and cleanup actions." The Coast Guard planned to restrict

96. J. Berliner (United Press International), "DEC Chief Uses Oily Eagle to Rebut Exxon," *Anchorage Daily News*, 22 Mar. 1990, sec. E.

97. S. Rinehart and D. Postman, "Cowper, Yost Disagree on Spill Damage," *Anchorage Daily News*, 24 Mar. 1990, sec. C.

98. *Ibid.*

99. D. Postman, "Bayliss is Back to Make Waves," *Anchorage Daily News*, 12 Apr. 1990, sec. B. According to the article, the name "Enviropimp" was "ribald and lighthearted, but it got the point across."

its spokespersons' roles to those who were knowledgeable, experienced, and most able to inspire media confidence. Those individuals needed to have direct access to the FOSC or, it was expected, the effort would fail. In the meantime, the Coast Guard wished to maintain the perception that it was the lead agency in the response. The public affairs program would play an important role in those efforts.<sup>100</sup>

The FOSC made a concerted effort to clarify once again the persistent question of "who is in charge" at the onset of the 1990 cleanup season.<sup>101</sup> Admiral Ciancaglini called a meeting of reporters and editors on 30 April, the day before startup of 1990 cleanup operations. Declaring a need to clarify matters of cleanup decision-making and authority, the FOSC strongly urged journalists to attend the session.<sup>102</sup> Participants were informed that the National Contingency Plan (NCP) specified that the FOSC was in charge of the spill response. Copies of the NCP were distributed, and its delegation-of-provisions authority explained. The new Technical Advisory Group (TAG) format for shoreline cleanup decisions was described, and a question and answer period was provided.<sup>103</sup>

The meeting was intended to help reporters come to appreciate better the Coast Guard's position and responsibilities. Despite those efforts, articles continued to appear in the local papers on the "who's in charge" theme. Admiral Ciancaglini felt that state authorities were continuing to contest the FOSC's authority, and that they continued to use the news media to air the issue, despite his efforts to explain the matter directly to media representatives.<sup>104</sup>

U.S. Coast Guard Headquarters issued instructions for the 1990 cleanup season prescribing strict limitations on the number of persons who would serve as spokespersons for the FOSC. "Those involved with the legal process have expressed concern about the number of individuals the Coast Guard has had speaking to the press," reported a communication from Headquarters in January. While not imposing a strict prohibition upon any conversation within the field in response to media inquiries, the commandant outlined procedures for screening, qualifying, referring, and (when appropriate) providing answers to such requests.<sup>105</sup>

A larger public affairs staff was organized for the summer months in 1990, with all activity being based out of the FOSC's Anchorage office. A senior level officer was placed in charge of the public affairs/protocol operation, and a staff consisting of two

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100. USCG Headquarters Community Relations Branch, memorandum to USCG Headquarters Office of the Commandant, 6 Dec. 1989, no. W362, FOSC Exxon Valdez Archive.

101. Rinehart and Postman, "Cowper, Yost Disagree on Spill Damage." Public statements made by several ADEC spokespersons commenting on the Technical Advisory Group (TAG) program seemed to challenge the authority of the FOSC during the month previous to the Admiral's meeting. "We set the [cleanup] agenda," stated Ernie Piper, for example.

102. R. Pagaro (Associated Press), "Admiral Fears Oil Spill Reporting is Going Askew," *The Anchorage Times*, 29 Apr. 1990.

103. Ciancaglini, interview, 11 Feb. 1992.

104. Rear Adm. D. E. Ciancaglini and Vice Adm. C. E. Robbins, interview by Dr. T. Leschine (FOSC staff), Comdr. D. Maguire, and Lt. Comdr. R. Gaunt, Anchorage, 10 Sept. 1991, no. F106, tape, FOSC Exxon Valdez Archive.

105. USCG Office of the Commandant, memorandum to all Coast Guard districts, 22 Jan. 1990, no. W338, FOSC Exxon Valdez Archive.

junior officers and two enlisted personnel carried out day-to-day duties.<sup>106</sup> The staff assisted the FOSC with the development of press releases, and helped to set up occasional press conferences and media interviews.

#### ISSUES IN THE NEWS IN 1990

As in 1989, numerous controversies, often involving conflict between the FOSC and ADEC, were played out in the news media. Even before the cleanup season officially got underway the governor and ADEC Commissioner Kelso had issued several statements that the Coast Guard regarded as inflammatory.<sup>107</sup> The newly formulated Technical Advisory Group concept was attacked by Commissioner Kelso because it involved closed-door deliberations.<sup>108</sup> The debate over the matter lasted nearly a month. After tests of the bioremediation compound Inipol were agreed to, ADEC's Gary Hayden characterized the compound as having been pushed by federal officials and Exxon, and likely "to kill all organisms on contact."<sup>109</sup>

Heated skirmishes arose over the proposed use of the cleaning agent Corexit 9580, over bioremediation practices, over the "rock washer," over the standards of beach cleanliness to be used in signing off treated shorelines, and over the cleanup techniques to be employed at specific sites. The field of battle was often the news media, despite efforts by the FOSC to resolve contentious issues through discussion within the fora he had created, such as TAG. Confrontations between Coast Guard monitors and ADEC personnel were not uncommon in the field through the 1990 summer months. Reading the morning papers to learn of the latest controversy became a regular ritual for FOSC personnel.

While the FOSC sometimes found himself in heated and hard-fought disputes with Exxon authorities as well, such disputes were usually resolved behind closed doors.<sup>110</sup> Following "resolution" of a dispute with ADEC, however, the FOSC sometimes found that the matter hadn't been finalized at all. Instead, critical and/or accusatory statements would be released to the news media, and new controversies would ignite. Admiral Ciancaglini came to feel that some state spokespersons were more interested in continuing the friction than in seeking constructive solutions to problems as they arose.<sup>111</sup>

When an *Anchorage Daily News* article produced an indignant public response, the FOSC became involved in still another confrontation. The item, attributed to *Anchorage Daily News* staff reporter Charles Wohlforth, reported that NOAA Scientific Support Coordinator John Robinson had proclaimed that "subsistence users, if they

106. USCG, "FOSC Exxon Valdez Personnel Report" (list of personnel on scene, 12 June 1991), no. F683, FOSC Exxon Valdez Archive.

107. Rinehart and Postman, "Cowper, Yost Disagree On Spill Damage."

108. "Open the Doors," *Anchorage Daily News*, 29 Apr. 1990.

109. C. Wohlforth, "Chemical Gets 6-Week Tryout on Shorelines," *Anchorage Daily News*, 2 May 1990, sec. A.

110. Ciancaglini, interview, 10 Sept. 1991; and Capt. D. Zawadzki, interview by Lt. Comdr. R. Gaunt, Dr. T. Leschine (FOSC staff), and A. van Emmerik (FOSC staff), Anchorage, 21 Feb. 1992, no. F214, tape, FOSC Exxon Valdez Archive.

111. Ciancaglini and Robbins, interview, 10 Sept. 1991.

don't like it (oil on the shorelines), can go somewhere else."<sup>112</sup> The statement aroused and angered many Alaskans. Passions were further inflamed when an ADEC public information employee faxed copies of the article to native villages and corporations throughout the state.<sup>113</sup> Later, Wohlforth admitted that Robinson really hadn't actually *said* that "subsistence users can go somewhere else," and that perhaps he had been "too glib" in his summary of what he had observed.<sup>114</sup> Particularly troubling about the Robinson matter, in the view of the FOSC, was the substantial fallout caused by ADEC distribution of the item. "To distribute the information without verifying authenticity is inexcusable," reported FOSC Chief of Staff Zawadzki, "because it creates mistrust and confusion where none are needed."<sup>115</sup>

The FOSC found himself enmeshed in yet another such altercation late in the summer when the *ADEC Weekly Report* of 15–21 August proclaimed that "the Admiral's [Ciancaglini] comments repeatedly characterized concerned native leaders and fishermen as 'extremists' who were out to 'stop any [cleanup] work...no matter what it took'."<sup>116</sup> Not surprisingly, the report was upsetting to many.

Exxon's general manager, Otto Harrison, who had attended the session where Admiral Ciancaglini's comments were alleged to have been made, promptly dispatched a letter to ADEC expressing his strong exception to the statements that had been attributed to him. "Admiral Ciancaglini did not at any time in his references to extremists, tie that term to fishermen or native leaders," wrote Harrison. "I was astounded that either of your representatives would ever make such a charge." Harrison termed the characterizations blatant and inexcusable.<sup>117</sup>

Admiral Ciancaglini also responded to ADEC's charges. Calling the report "'mud slinging which is totally counterproductive to the pollution response," Ciancaglini emphatically stated that ADEC's comments were "totally false." Pointing out that he had been "painstakingly careful to work with and take into account the views of fishermen and community leaders," the FOSC reported that he felt "appalled that you (ADEC) would discredit me and the Coast Guard."<sup>118</sup>

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112. C. Wohlforth, "State Adopts High Standard for Oil Cleanup," *Anchorage Daily News*, 19 July 1990. Rear Adm. D. E. Ciancaglini was forced to inform Mr. Wohlforth: "Charles, I'm not going to talk to you again unless you start printing things as I have said them. If I tell you something, print it the way that I have said it. Don't change it, don't slant it, don't change the meaning or don't put in other information that is absolutely wrong. If you do that to me one more time, I'm not going to give you anymore interviews" (Ciancaglini and Robbins, interview, 10 Sept. 1991).

113. E. McMullen (Port Graham Village Council), letter to J. Robinson (NOAA), 20 July 1990, no. W1695; J. Larsen, Jr. (The Aleut Corp.), letter to C. Ehler (NOAA), 25 July 1990, no. W1704; and J. Fall (ADF&G), letter to J. Robinson (NOAA), 25 July 1990, no. W1703, FOSC Exxon Valdez Archive. Two of these letters furnish evidence that Native organizations and representatives were, indeed, upset regarding the content of the article which was subsequently sent to a wide distribution. The third source cited provides evidence that even state agencies were reading the content of Wohlforth's comments, and accepting them as being accurate.

114. A. Smith, Esq. (North Pacific Rim Assn.), letter to Tribal Councils Association boards, 31 July 1990, no. W1449, FOSC Exxon Valdez Archive. Smith had conducted a personal investigation of the incident, including an interview with Wohlforth, and was, as North Pacific Rim spokesperson to a large number of Native organizations, attempting to correct misunderstandings which were created by the 19 July 1990 article.

115. Capt. D. Zawadzki, letter to R. Bayliss (ADEC), 14 Aug. 1990, no. W1430, FOSC Exxon Valdez Archive.

116. ADEC, "General" section (weekly report, 15–22 Aug. 1990), FOSC Exxon Valdez Archive, 5.

117. O. Harrison (Exxon), letter to R. Bayliss (ADEC), 24 Aug. 1990, no. W1345, FOSC Exxon Valdez Archive.

118. Rear Adm. D. E. Ciancaglini, letter to R. Bayliss (ADEC), 24 Aug. 1990, no. W1425, FOSC Exxon Valdez Archive.

Circumstances in the local media market may have influenced coverage of the spill. During most of the life of the response, Anchorage's two major daily newspapers were locked in a continuing struggle for readership and eminence in the state.<sup>119</sup> Following the purchase of *The Anchorage Times* by VECO, Exxon's prime cleanup contractor, in December 1989, the tone of *The Anchorage Times* became increasingly conservative and supportive of Exxon's efforts in the spill, and the two papers increasingly came to represent opposite political extremes on a variety of issues. Despite the problems the *Anchorage Daily News'* often exposé-like tone and emphasis posed for the Coast Guard, the paper's coverage of the spill was highly regarded by other journalists who covered the event.<sup>120</sup>

*The Technical Advisory Group as a media issue.* Because many of the 1990 operational decisions became important media issues, it is difficult to separate discussion of the two areas. The Technical Advisory Group initiated by Admiral Ciancaglini in 1990 as a means of expediting the cleanup decision-making process is a case-in-point.<sup>121</sup> The TAG process was intended to accommodate advisory inputs from the secondary agencies in segment-by-segment cleanup decisions. The FOSC held that since provision had been made to include a broad base of agency involvement in TAG, it was not unreasonable to have TAG operate under a closed (and hopefully, therefore, more efficient) meeting format. The purpose of TAG was to examine one-by-one the substantial number of shoreline segments that would be considered for treatment in 1990, and to make final recommendations on each to the FOSC, thereby expediting the decision-making process. "Consensus" was a major theme of TAG.<sup>122</sup> Admiral Ciancaglini felt that the 1989 open meeting arrangement of the Interagency Shoreline Cleanup Committee (ISCC) had slowed the cleanup process considerably.

The TAG meeting format quickly came under criticism from newly appointed state OSC Randy Bayliss. "State workers," he reported, "will walk out of meetings from which reporters are excluded."<sup>123</sup> He and other state officials attempted to impose provisions of a state of Alaska open meetings law, to force access for reporters and members of the general public.<sup>124</sup> Admiral Ciancaglini planned to hold the meetings regardless of ADEC participation. "They had the option to refuse to take part, and that would have been their choice, but the meetings would have been held with or without Alaska DEC," stated the Admiral.<sup>125</sup>

119. The contest ended in early summer of 1992 when *The Anchorage Times*, citing substantial financial losses, ceased its operations.

120. Ohio State University, School of Journalism, "News Coverage of the Exxon Valdez Spill: Summary of Information From Surveys of Reporters and Sources."

121. In a conversation on 6 Feb. 1992 between Rear Adm. D. E. Ciancaglini and BM1 R. Travis of the FOSC staff, Ciancaglini credited Capt. Zawadzki, Comdr. Rome, and Comdr. Reiter, Andy Teal (Exxon), Joe Talbott (NOAA), and Art Weiner (then of ADEC) with having conceptualized the TAG idea.

122. J. Talbott (NOAA), interview by Lt. Comdr. R. Gaunt, Anchorage, 28 Feb. 1992, no. F667, notes, FOSC Exxon Valdez Archive. Talbott reported that unanimity was attained in nearly every case considered. If accord was not reached, the decision was deferred to the FOSC.

123. C. Wohlforth, "Cleanup Meetings May See New Light," *Anchorage Daily News*, 12 Apr. 1990, sec. B.

124. The state referred to Alaska Statutes, sec. 44.62.310. But Coast Guard District 17 (legal department) responded that the statute did not apply to TAG meetings since; (1) TAG is not a state or local entity; and (2) the Doctrine of Sovereign Immunity prevents a state from dictating to the federal government how the government shall conduct business. In addition, it offered the opinion that the fact that TAG meetings were closed did *not* prohibit state employees from attending and taking part (Capt. M. Dorsey, memorandum to chief of Marine Environmental Branch, 12 Apr. 1990, no. W985, FOSC Exxon Valdez Archive).

125. Ciancaglini, interview, 11 Feb. 1992.

The *Anchorage Daily News* editorialized, "If Admiral Ciancaglini won't open the doors, then the State should bid him farewell until he relents."<sup>126</sup> Admiral Ciancaglini remained firm. Because the meetings were advisory, applicable federal code did not require that open access be provided.<sup>127</sup> In the interest of information dissemination about developments in TAG meetings, he required committee members to make themselves available for questions from the media and members of the general public at the conclusion of each meeting. In fact, such post-meeting inquiries proved to be rare. The provision of such forums, however, very likely helped to reduce criticism of the TAG. Commissioner Kelso soon announced that state workers would not boycott TAG meetings after all, since such a maneuver would "hurt the state's position."<sup>128</sup>

These differences between the agencies became prominent in the Alaska news media. Local journalist Charles Wohlforth called the closed format of TAG meetings a "cloak of secrecy." His articles suggested that something sinister was going on behind closed doors.<sup>129</sup> Other public expressions of discontent with the TAG meeting format came from the Sierra Club, which declared that it found it "disturbing that the federal agencies and Exxon feel that they have something to hide."<sup>130</sup>

Commissioner Kelso, while reluctantly agreeing to permit ADEC participation under the closed format, publicly differed with the FOSC. "We think the meetings should be open, but we have an obligation to the people of the state to see that our interests are represented at the table," he was quoted as saying.<sup>131</sup> By emphasizing his differences with the FOSC through the news media, Commissioner Kelso raised doubts about a decision making process which, in the judgment of the FOSC, was critical to expediting 1990 cleanup operations.<sup>132</sup>

The TAG meeting format represented a distinct change from what had existed in 1989. The ISCC meetings had regularly served as a forum for public discussion of every issue that arose. During the first year of the response, particularly during the early stressful period of adjustment to the realities of confronting a truly massive oil spill, there was an unquestioned need for fora in which citizens might voice frustrations and freely ask questions about spill related issues. The ISCC and Multi-Agency Committee (MAC) meetings came to serve that purpose. Some of the speakers at such sessions may well have tried to capture media attention through their public remarks, while others may have simply voiced frustrations. On balance, however, public meetings were an

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126. "Open The Doors," *Anchorage Daily News*, 29 Apr. 1990.

127. Capt. M. Dorsey, memorandum to chief of Marine Environmental Protection Division. Federal statutes (Title 5 CFR), chapter 5 (Administrative Procedures), 552b (Open Meetings), require open meetings when official governmental decisions are being made. Since the TAG committee was engaged, however, in advisory functions, it was determined by Coast Guard legal authorities that open meeting requirements did not apply.

128. C. Wohlforth, "Kelso: State Won't Boycott Closed Oil-Spill Meetings," *Anchorage Daily News*, 18 Apr. 1990, sec. B.

129. Wohlforth, "Cleanup Meetings May See New Light."

130. T. Waldo (Sierra Club Legal Defense Fund), letter to Rear Adm. D. Ciancaglini, 20 Apr. 1990, no. W979, FOSC Exxon Valdez Archive.

131. Wohlforth, "Kelso: State Won't Boycott Closed Oil-Spill Meetings."

132. Associated Press, "Scientists, Officials Play TAG on Sound Cleanup," *Fairbanks Daily News-Miner*, 4 Apr. 1990. S. Provant (ADEC) On Scene Coordinator appeared "optimistic" about the TAG process. "This process will help identify the areas where we agree, the areas we disagree, and how to settle the areas where we disagree," he reported. Provant was replaced (by Randy Bayliss) as State On Scene Coordinator only a few days later.

important means of sharing information, addressing rumors, and permitting the venting of public frustrations in 1989.

Although TAG meetings continued to be closed, the FOSC maintained a policy of openness in other arenas. Public Operations Steering Committee meetings, for example, usually attended by high-level spokespersons for each of the major response agencies, were not only open to the public, but agenda time was provided for questions and comments from those gathered. The arrangement permitted "oiled mayors" (an informal name adopted by an organization of mayors of communities affected by the spill), land managers, Native Alaskans, fishermen, and environmental groups to participate.<sup>133</sup>

#### PUBLIC AFFAIRS AND PROTOCOL EVENTS IN 1990

The FOSC public affairs/protocol office began a buildup for the summer season during the late winter period when a second officer came aboard in time for an anticipated flurry of media activity on the anniversary date (24 March) of the spill. Media interest was brisk as the anniversary approached. Both ADEC and Exxon played active public affairs roles in the observance while the Coast Guard did not, at the direction of the commandant.<sup>134</sup> The anniversary day witnessed a variety of activities to commemorate the spill, including a protest demonstration at Alyeska's Anchorage offices. Additional observances took place in several other areas including Homer and Cordova.<sup>135</sup>

Forty-seven journalists took part in an FOSC-sponsored tour of spill area sites in mid-March. The trip featured visits to four different types of shorelines, and it offered media personnel a firsthand opportunity to observe conditions in the spill area following the effects of winter storm action.<sup>136</sup> Preparations for the tour, and organizing for a 21 March visit by the commandant, occupied the public affairs/protocol staff during the late winter weeks.

Although the number of protocol-hosted visitors was substantially diminished from the previous year, they included in addition to the commandant of the Coast Guard, several parties from the Congress and from various governmental agencies, as well as four international delegations. Three cabinet secretaries visited during the period, while Alaskan U.S. Senators Stevens and Murkowski, and several other senators, were among other 1990 FOSC guests. Admiral J. William Kime, the newly appointed commandant, came to the area late in the month of July. As had been the case in 1989, September's arrival signaled reduced activity, and once again the public affairs/protocol function was sharply diminished.<sup>137</sup>

133. USCG, "Operations Steering Committee" (summaries of Operations Steering Committee meetings, Mar.-Sept. 1990), no. W606 (20 Mar. 1990), W806 (17 Apr. 1990), W915 (8 May 1990), W1257 (22 May 1990), W1313 (26 June 1990), W1315 (10 July 1990), W1328 (24 July 1990), W1341 (14 Aug. 1990), and W1423 (28 Aug. 1990), FOSC Exxon Valdez Archive.

134. BM1 R. Travis, conversation record, 17 Mar. 1991, no. F766, FOSC Exxon Valdez Archive.

135. L. Campbell, "Crowd Tells Oil Industry: No More Lies," *Anchorage Daily News*, 25 Mar. 1990, sec. B.

136. USCG, "Operations Steering Committee" (summary of Operations Steering Committee meeting, 20 Mar. 1990), no. W606, FOSC Exxon Valdez Archive.

137. USCG, "Selected Distinguished Visitors to FOSC." From organization records during summer of 1991.



## THE CHANGING POLITICAL SCENE IN 1991

During the fall of 1990, the state of Alaska saw a gubernatorial campaign that resulted in the election of a new state leader, Walter Hickel. This marked the beginning of a much less confrontational phase of the spill response. Governor Hickel appointed a new commissioner of ADEC (John Sandor), and a new state attorney general (Charles Cole). In Admiral Ciancaglini's view, "They [Sandor and Cole] passed on the word to people to deal straight, play it right, and to cooperate with all concerned to get the job done as best they could, for the good of Alaska and the environment."<sup>138</sup>

Events following the 1990 election were characterized by a much more cooperative climate. "There is no question about it," recalled Admiral Ciancaglini, "There was a night and day difference in the state organization, and it occurred as soon as the new administration took office."<sup>139</sup>

Media interest was comparatively light during the 1991 summer months, focusing principally on requests for progress reports. Although VIP visits were less frequent, protocol responsibilities consumed a substantial amount of staff attention. Public meetings were held on a regular basis (monthly), but came to deal with mostly routine matters. Public affairs personnel were able to use the available time to organize materials that had accumulated during the previous two years.

## PREPARATIONS FOR THE END OF OPERATIONS

At a joint meeting held in Juneau, in January 1992, representatives of ADEC, Exxon, and NOAA met with the FOSC to plan the 1992 summer response effort. As work priorities and formats were reviewed and as planning towards the impending completion of Coast Guard involvement in the response unfolded, there continued to be a spirit of cooperation and conciliation among participants. Following a suggestion by John Sandor, commissioner of ADEC, a major public relations effort was developed for the 1992 season.<sup>140</sup>

Working cooperatively, it was agreed that the main agencies would produce progress reports to provide assurances that the cleanup had moved to a phase where restoration could now become the focus. Jointly produced documents, an audio visual presentation, a press tour, collaborative news releases, and a session with members of the Alaska State legislature were featured. Representatives from each agency participated in planning for these activities.<sup>141</sup>

An issue brief submitted by the FOSC early in 1992 commented on anticipated public affairs activities for the forthcoming operations season. A priority was to bring the response to a conclusion, and to accomplish that goal while assuring observers that the Coast Guard's work in the response had successfully been completed. The brief noted

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138. Ciancaglini and Robbins, interview, 10 Sept. 1991.

139. Ciancaglini, interview, 11 Feb. 1992.

140. USCG, "Joint 1992 Cleanup Planning Meeting" (proceedings of 1992 planning meeting held at USCG District 17 headquarters, Juneau, 22 Jan. 1992), no. F316, FOSC Exxon Valdez Archive.

141. *Ibid.*

that public meeting interest had declined noticeably during the previous year. Public meetings in 1992 would focus on the planned completion of the response phase, and aim to communicate an understanding of the transition from "response" to "restoration" operations to come.<sup>142</sup>

## SUMMARY

Uncovering and exploring controversial topics is fundamental to good journalism. Coverage of controversial subjects also can serve to increase newspaper sales and television viewership. This and the reality that most reporters had little experience with or knowledge of either Alaska or oil spills meant that reporters would frame the oil spill in terms that they and their audience could readily understand. Hence, the complex authority relationships among the FOSC, the RRT, and various state and federal agencies became simply the "who's in charge" controversy. The legal responsibilities of the state and the responsible party (Exxon) became a "David and Goliath" story. In the midst of this, both Exxon and the state of Alaska developed sophisticated media strategies to meet their respective agendas. Against this backdrop the Coast Guard emerged as a naive participant in media relations which, lacking its own well-defined strategy, frequently found itself caught in the middle simply trying to "set the record straight." The Coast Guard became reactive in the face of the state's and Exxon's pro-active stances. This position changed over time, however. By 1992, the FOSC had a well developed media plan to deal with anticipated issues and problems associated with ending the cleanup. The plan proved successful and highlighted the need to include media relations in both contingency planning and the FOSC's decision-making process.

The Coast Guard's protocol activities similarly went through a lag phase in which initially accommodating important visitors was seen by many as simply an annoyance that impeded more important work. Eventually, protocol activities also came to be seen as important components of both making the case that the Coast Guard was doing an effective job and signaling Coast Guard needs to higher level authorities.

Unquestionably the Coast Guard "lost" in several important instances in which the battle for public opinion played itself out in the news media. This will be interpreted as failure by some. It is, however, also indicative of how limited the news media are in their ability, and occasionally willingness, to frame difficult questions of risk and social trade-offs in ways that avoid simplistic generalization and the creating of "good guys" and "bad guys."

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142. USCG, Issue Brief no. 7, in "FOSC Shoreline Assessment and Cleanup" (1992 planning document, 22 Jan. 1992), no. F677, FOSC Exxon Valdez Archive.



## CHAPTER 22. PERSONNEL

### OVERVIEW

The grounding of the *Exxon Valdez* generated an unprecedented challenge for Coast Guard manpower managers. On 24 March, as the response began, Commander Steve McCall had a staff of forty-three.<sup>1</sup> During the next six months, approximately eleven hundred Coast Guard personnel served in 349 billets developed in support of the Coast Guard's monitoring role over Exxon.<sup>2</sup>

Locating and assembling the needed complement of personnel and training many of those assigned to the response proved to be a major undertaking. Maintaining the continuity and efficiency of operations, and providing the most positive working environment that circumstances would allow were important considerations, particularly in light of the high turnover rate of personnel. This turnover created a need for constant training of new arrivals and led to a lack of stability within the lower- to mid-level ranks.

The task of staffing for the response was undoubtedly simplified when Exxon assumed obligation for the cleanup. Exxon's action meant that the Federal On Scene Coordinator (FOSC) would monitor, rather than direct, the response operation. Had it been necessary to organize a full-fledged federal response, the FOSC would have had to procure directly a broad array and number of personnel and equipment.<sup>3</sup> Either military personnel or private contractors hired by the Coast Guard could have served as a workforce had Exxon declined to assume responsibility for the cleanup. However, the Coast Guard would have been hard pressed to provide the number and variety of technical experts required for cleanup. Even though Exxon assumed responsibility, monitoring the response provided a daunting challenge to the FOSC and the Coast Guard.

### STAFFING THE RESPONSE

The response to the *Exxon Valdez* oil spill was felt throughout the Coast Guard's personnel system. A number of personnel issues rose to prominence over the four year course of the effort. Particular questions that are addressed in this chapter include: confusion among Coast Guard personnel procurement centers during 1989, the view of

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1. Lt. Comdr. T. P. Falkenstein, telephone conversation with Lt. L. Benton, 30 May 1990, no. W1964, notes, FOSC Exxon Valdez Archive. The figure reported at the USCG Marine Environmental Response Division (G-MER) Conference in Dec. 1989 was thirty-eight personnel at the MSO.

2. This information comes from the FOSC personnel list, information maintained in a UNISYS database during the summer of 1991. The figures refer to 1989 participation, not the entire duration of the response.

3. Exxon utilized about eleven thousand personnel in 1989. When progress in the cleanup seemed to be languishing in early April, consideration was given to the use of U.S. military troops as cleanup workers. When asked about this possibility, Vice Adm. C. E. Robbins responded, "I know that they were considered, because I personally participated in some very high level conversations where the topic was discussed" (Rear Adm. D. E. Ciancaglini and Vice Adm. C. E. Robbins, interview by Dr. T. Leschine [FOSC staff], Comdr. D. Maguire, and Lt. Comdr. R. Gaunt, Anchorage, 10 Sept. 1991, no. F106, tape, FOSC Exxon Valdez Archive).

the response as the problem of a particular program within the Coast Guard rather than the whole Coast Guard, the lack of Coast Guard "surge capacity," the impact of high turnover rates and lack of personnel continuity, and the impact of the response on other Coast Guard units and functions.

Coast Guard oil spill response capabilities are organized on multiple levels. The local captain of the port (COTP) has spill response plans for their areas of responsibility, and, as predesignated FOSCs, normally handle at that level without additional Coast Guard involvement when they judge themselves able to do so.<sup>4</sup>

When a spill response is judged by the FOSC to exceed the capabilities of the local unit, it is necessary to obtain the assistance of a strike team, essentially a "level two" procedure.<sup>5</sup> Strike teams are mobile groups of spill control specialists who can be brought to a spill to lend their expertise to the local effort. At the time of the *Exxon Valdez* grounding there were two Coast Guard strike teams, covering the Atlantic and Pacific regions. A call for strike team assistance was made on 24 March, 0249 hours, and members of the Pacific Strike Team arrived in Valdez on 25 March.

Should a spill exceed the combined capabilities of the COTP and the strike team, available resources from throughout the Coast Guard district of which the COTP is a part can be mobilized as well. In such a case, a level three response is actuated. Seventeenth Coast Guard District (CGD 17) resources were also involved in the response within the first few hours of the spill.

The largest spills demand the highest levels of participation. The *Exxon Valdez* response necessitated going well beyond CGD 17 personnel support capabilities, ultimately to use personnel from other commands and Coast Guard districts. Several hundred reservists from all over the country were required. The *Exxon Valdez* spill gave rise to the concept of a "spill of national significance."<sup>6</sup> Previous planning had not anticipated an event of such a magnitude and the spill initially overwhelmed the response effort that was mustered.<sup>7</sup> The Coast Guard's personnel procurement system was likewise stressed in an unprecedented way.

## THE 1989 CLEANUP SEASON

The complexity and resultant confusion associated with mobilization of manpower resources can be seen in the number of organizations that filled billets and issued orders. As seen in figures 22.1 and 22.2 not only were there multiple groups simultaneously filling billets and issuing orders, but central coordination of the entire

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4. In most ports in the U.S., the Coast Guard captain of the port is also the commanding officer of the marine safety office (MSO); such is the case for the port of Valdez and western Alaska.

5. USCG, "Marine Safety Manual," Commandant Instruction no. M16000.7, vol. 6, ch. 7, sec. 7 (D)(4)(a). Provides that, "OSC's are encouraged to use the NSF [National Strike Force] whenever its expertise or equipment is needed, or to augment the OSC's staff when it is overburdened by a response to a given incident."

6. S. Skinner (DOT) and W. K. Reilly (EPA), "The Exxon Valdez Oil Spill: A Report to the President" (prepared by The National Response Team [NRT], May 1989), no. C1388, FOSC Exxon Valdez Archive. The origin of the term "spill of national significance" is not known. That phrase, however, was employed in the NRT's report to the president.

7. Ibid. The National Response Team concluded, in its report to the president, that "It appears that the Alaska RRT and the state of Alaska did not adequately consider equipment, manpower, and the logistical problems associated with such a large spill."

program was limited. As the response progressed, order was brought to the process. However, it was not until the 1990 cleanup season that a long-term solution to the problem of stabilizing the personnel situation was implemented.

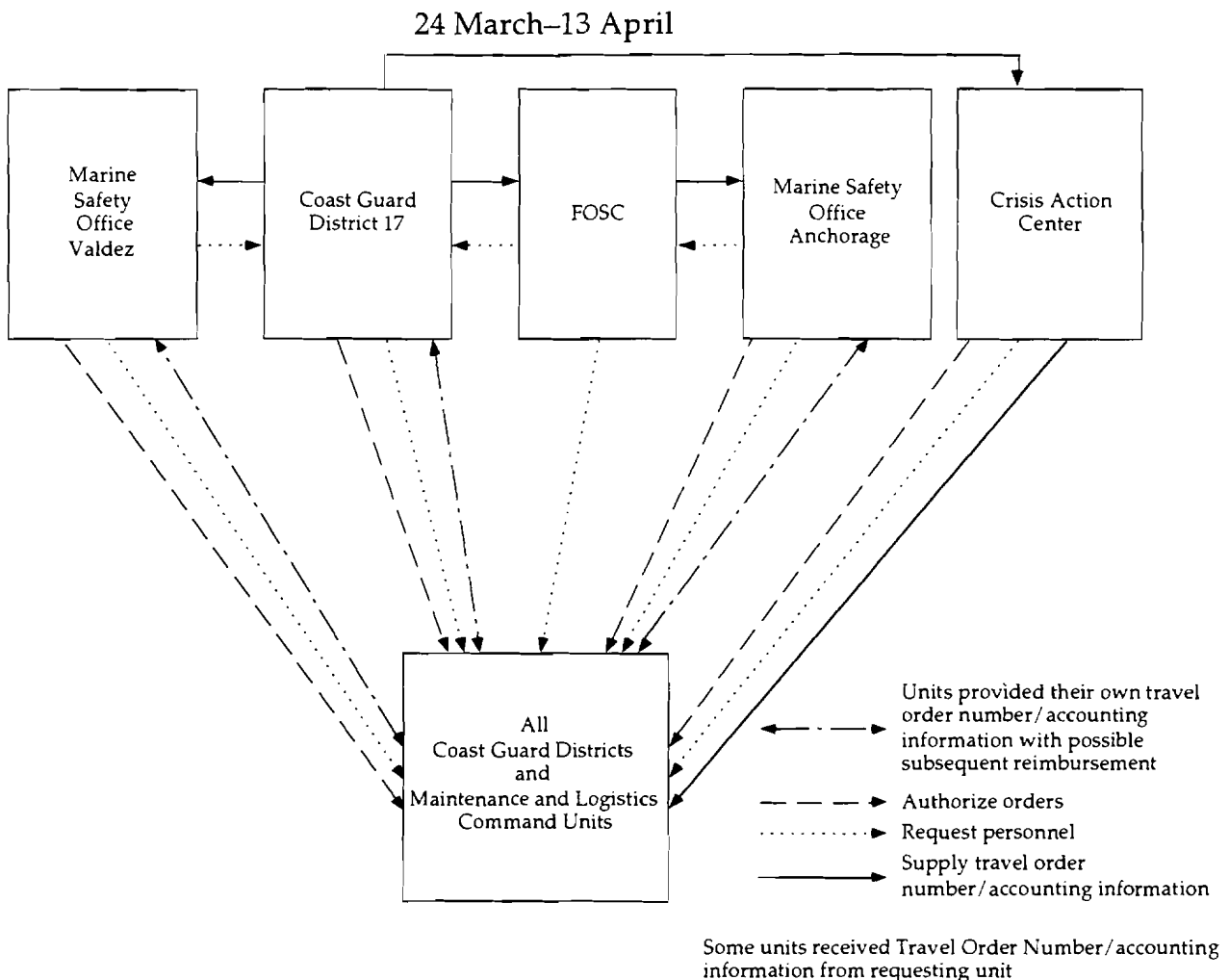


Figure 22.1. The response from 24 March–13 April involved multiple units in both requesting personnel and issuing orders.

The spill required that the response staff be built as needs arose and/or became apparent. As events unfolded, it was constantly necessary to upgrade and adjust the billet structure in response to changing needs. In addition, turnover of personnel caused frequent interruptions of continuity. Although stability often seemed elusive, the FOSC staff worked to bring order to the process, and, in concert with Coast Guard personnel detailers in other parts of the country, established a personnel system that worked reasonably well.

During the first few days of the response, the process of obtaining needed personnel to augment the MSO Valdez staff was handled by Coast Guard District 17, with assistance

## 6 June 1989–1990 Cleanup Terminus

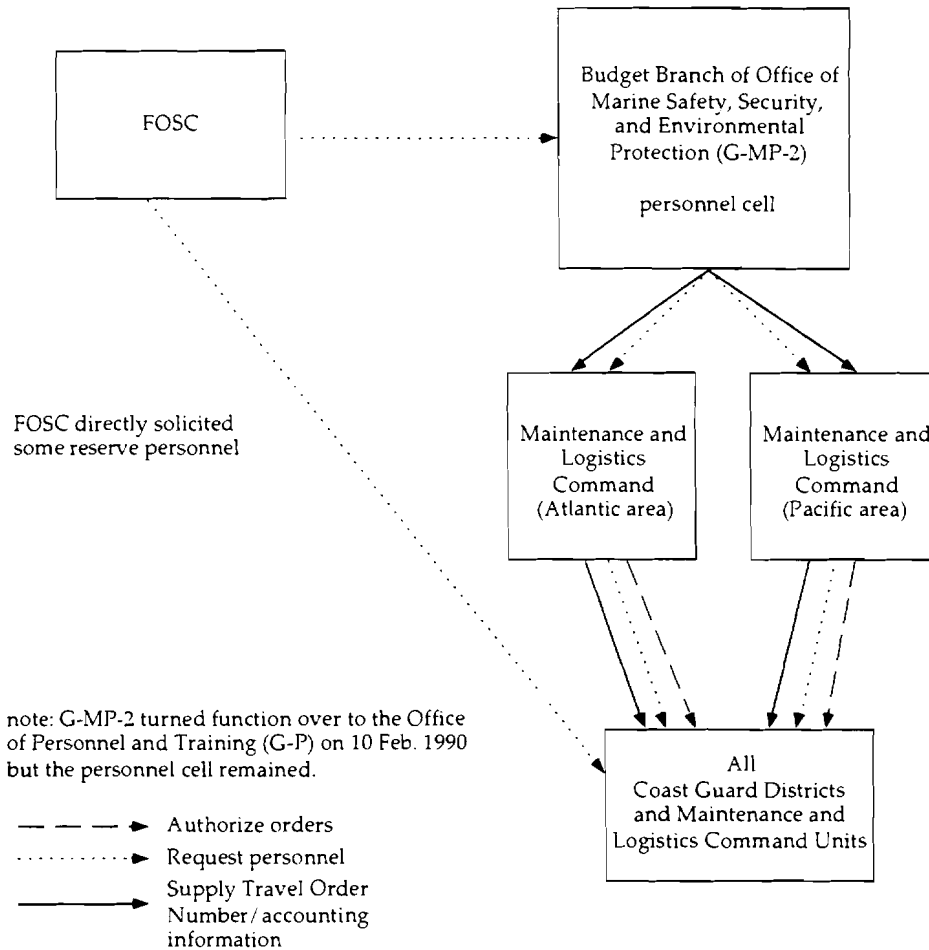


Figure 22.2. The response from 6 June 1989–1990 cleanup terminus only a single organization, the personnel cell at U.S. Coast Guard Headquarters, coordinated requests and issued orders.

from the U.S. Coast Guard Headquarters Crisis Action Center (CAC).<sup>8</sup> The Crisis Action Center attempted to locate potential help, then informed Coast Guard District 17 where the available resources might be found. Coast Guard District 17 began to issue travel order numbers (TONOs) and to provide accounting data, but the system did not serve the interests of harmony within the Coast Guard. Coast Guard District 2, for example, expressed outrage that the CGD 17 was detailing “their” personnel.<sup>9</sup>

8. Lt. Comdr. M. H. Johnson, interview by Lt. Comdr. R. Gaunt, Anchorage, 8 Sept. 1992, no. F681, tape, FOSC Exxon Valdez Archive. According to Comdr. Johnson, the Crisis Action Center was activated due to a “dilemma”: the Office of Personnel and Training (G-P) held a philosophy that it did not issue temporary active duty orders, so some other issuing authority had to be found. In reality, personnel from the Office of Marine Safety, Security, and Environmental Protection (G-M) would prepare the orders and bring them to CAC for a “rubber stamp.” It is also clear that a close relationship between CAC and G-M existed since CAC was staffed “almost exclusively,” according to Johnson, with marine safety officers and petty officers. The precise lifeline of CAC was not able to be determined by FOSC historians, but it is estimated that the organization functioned approximately between 27 March and 16 June.

9. Lt. Comdr. M. H. Johnson, memorandum to chief officer of personnel division, 7 Aug. 1989, no. C337, FOSC Exxon Valdez Archive.

The practice of a district office assisting in projects beyond a local COTP's capabilities is by no means unusual. But as it became evident that many more personnel would be needed (and for longer periods) than the district alone could supply, the burden of providing staff for the response shifted from CAC/district arrangements to the U.S. Coast Guard Headquarters Office of Marine Safety, Security and Environmental Protection (G-M). Initially, the U.S. Coast Guard Headquarters Office of Personnel and Training (G-P), which was geared to detailing personnel for permanent, rather than temporary assignments, proved unable to offer significant assistance. It thus remained for G-M to carry a heavy portion of the responsibility for finding personnel for the response.<sup>10</sup>

One of the early steps taken to bring order to the personnel system was developing a billet structure. The billet structure was the product of FOSC requests, based upon needs that became apparent as the response effort developed. The initial billet structure arrived at U.S. Coast Guard Headquarters during the last week in April 1989. With the formal document finally in place, it was a bit clearer for the U.S. Coast Guard Headquarters Officer Personnel Division (G-PO) and the U.S. Coast Guard Headquarters Enlisted Personnel Division (G-PE) just what categories of help were needed. Solicitations for assistance were made to MSOs, and to other likely sources of qualified help, and later a general request for volunteer reservists was sent to the reserve network.<sup>11</sup>

On scene personnel were assigned to six different operations centers in 1989 (table 22.1). The concentration of billets for support activities at Valdez reflects the degree to which response management became centralized there under the organizational arrangements developed by Vice Admiral Clyde Robbins. The disproportionately large number of billets assigned to field operations at Kodiak appears to reflect both the large size of the Kodiak area and the great distances that frequently existed between oiled sites.

According to the officer in charge at Incident Command Post (ICP) Kodiak, sites were often simply too far apart to permit some of the scale economies possible in Prince William Sound, where a single individual could perform the same basic function at several different oiled sites.<sup>12</sup> Actual on-board personnel complements often varied, owing to changing work volumes and frequently rotating assignments.

#### ASSESSMENT OF 1989 CLEANUP SEASON STAFFING

With the end of the first cleanup season there was much discussion of personnel matters and what went wrong and right. Participants at the U.S. Coast Guard Headquarters Office of Marine Safety, Security and Environmental Protection Marine Environmental Response Division (G-MER), Oil Spill Management Debrief Conference, held in December of 1989, suggested that CAC was as overwhelmed as

10. Comdr. H. R. Pettingill, interview by Lt. Comdr. R. Gaunt, 8 Sept. 1992, no. F426, tape, FOSC Exxon Valdez Archive.

11. Johnson, memorandum to chief officer of personnel division.

12. Comdr. D. Maguire, personal communication with Dr. T. Leschine (FOSC staff), 21 Aug. 1991, no. F771, FOSC Exxon Valdez Archive.



anyone else, and did not facilitate the assignment of needed personnel to the spill. "CAC had incredible difficulty [in] getting orders out," according to one of the participants. "Once the CAC was closed, there were no [more] significant [personnel procurement] problems," according to another.<sup>13</sup> Crisis Action Center involvement in personnel assignments ended on 17 June 1989, and temporary active duty (TEMAC) assignment responsibilities were handed to G-P. That arrangement was not universally regarded as an acceptable solution to the problem of personnel staffing, however. It proved to be a time consuming chore for U.S. Coast Guard Headquarters personnel, forcing certain personnel procurement tasks to be delegated back to the district level. Ultimately this new system was "implemented fairly smoothly and worked well," according to one G-MER observer.<sup>14</sup>

TABLE 22.1

Personnel Billets Assigned to Various Units During the Exxon Valdez Spill Response in 1989\*

Unit	Total Billets Assigned	Billets Assigned To Field Operations †	Billets Assigned To Support Operations ‡
Valdez	153	57	96
Kodiak	77	64	13
Homer	25	20	5
Seward	12	7	5
Cordova §	20	0	20
Anchorage**	40	0	40

\* The number of billets at each location represent maximum billets assigned. It appears that not all billets were filled during summer operations. Of the 349 FOSC billets in 1989, twenty-two could not be accounted for at specific locations.

† "FOSC Information Flow Analysis" (prepared by Lt. T. Marquette & Lt. Comdr. P. Olsen, 29 Sept. 1989). This does not indicate field operations billets being located in Anchorage or Cordova.

‡ The assignments in this category consisted largely of administrative and command support. Included were command personnel, administrative, personnel, data management, public affairs, logistics, etc.

§ Cordova billets consisted entirely of aircrew personnel, except for three billets which were filled by subsistence specialists (SS rating).

\*\* Anchorage billets consisted principally of personnel assigned to the Joint Task Force at Elmendorf Air Force Base (AFB) and those serving to augment the MSO staff.

But in the view of another observer, confusion occurred because "there were too many people involved with issuing orders."<sup>15</sup> The U.S. Coast Guard Headquarters Office of Readiness and Reserve (G-R), G-M, G-P, CAC, CGD 17, MSO Valdez, and MSO Anchorage, and later each district (m) and (r) office, all ordered personnel to take part in

13. USCG (G-MER), Tank Ship Exxon Valdez: Oil Spill Management Analysis Debrief, in "G-MER Conference Report" (summary of conference held in Alexandria, Virginia, 4-6 Dec. 1989), ch. 5, sec. 5.1, no. W292, FOSC Exxon Valdez Archive, 34-35. A 16 June 1989 G-M message to Governor Cowper et al., informed that "due to the continuing decline in workload at CGHQ generated by the oil spill...effective 16 June 1989 the Crisis Action Center...is disestablished." Those making statements at the G-MER Conference are generally not identified in the conference report.

14. Ibid, 35.

15. Ibid.

the cleanup.<sup>16</sup> This had the effect of sometimes leaving billets vacant for two or three days, while other billets were staffed by two individuals (each having been sent by a different authority), or, prolonged overlap periods occurred when a change was being made.<sup>17</sup> "Everybody in the world was involved in cutting orders," said one conference participant. Finding a means to centralize orders issuing authority in future spills was seen by G-MER participants as being essential.<sup>18</sup>

#### WINTER 1989–1990

As 1989 cleanup operations were completed, the FOSC moved to a winter phase, during which planning and evaluation took place. During the winter months air surveillance continued, scientific studies were conducted, and agencies conferred both in-house and with one another.<sup>19</sup> The FOSC staff developed its own activity plan and billet structure for the 1990 cleanup, and engaged Exxon in discussion of its plans for the next season's operations.

A total of 110 different individuals served within the forty-two member winter complement at the FOSC offices. Of those present, thirty-seven (33.6 percent) were reserves, twenty-seven of whom had gained experience while participating in the 1989 summer response.<sup>20</sup> The selection process emphasized individuals who had shown themselves to be hard working and capable during 1989 operations. In addition, the move toward expanded use of reservists reflected Rear Admiral David Ciancaglini's desire to minimize the impact upon other Coast Guard operations caused by borrowing large numbers of personnel from them.<sup>21</sup>

#### 1990 CLEANUP SEASON

In March, the FOSC's 1990 spring/summer billet list was published. It specified a total of ninety-five billets for summer operations, including fifty-one positions at the FOSC's Anchorage offices, and forty-four others at various field centers. Each of the ICPs was to maintain general watch and shoreline monitoring capabilities, and to be prepared for other assignments that might emerge during the summer months. The size of the respective personnel complements provides an indication of the anticipated activity at each site.

16. References with (m) and (r) in lower case are the Coast Guard short references for marine safety and reserve functions in any of the various Coast Guard districts. CGD 9 (r), therefore, refers to Ninth District reserve offices. (M) or (R) upper case references refers to U.S. Coast Guard Headquarters level for the same operations.

17. USCG, "G-MER Conference Report," 35.

18. *Ibid.*, 34–35.

19. Exxon maintained both vessel and aircraft operations throughout the winter months. It conducted what it termed a "Winter Science Program." The Alaska Department of Environmental Conservation (ADEC) regularly conducted independent flights, and had a vessel-based science program. In addition, there was a scientific survey program called the Winter Interagency Monitoring Program (WIMP). The National Oceanic and Atmospheric Administration (NOAA), as the FOSC's science advisor, held a prominent role in WIMP projects. Beginning in October, agencies met monthly (at the Operations Steering Committee meetings) to share information, to compare notes, and to discuss plans for the forthcoming year. The WIMP program also provided ample opportunity for interagency dialogue.

20. USCG, "FOSC Exxon Valdez Personnel Report," 12 June 1991, no. F683, FOSC Exxon Valdez Archive.

21. Rear Adm. D. E. Ciancaglini, conversation with Lt. Comdr. R. Gaunt, 24 Jan. 1991, no. F787, notes, FOSC Exxon Valdez Archive.

When assistance for the 1990 cleanup was solicited, it was specified that "every effort should be made to insure that personnel assigned have previous Valdez spill/FOSC experience." In addition, it was indicated that "personnel should be assigned continuously [ITD/TEMAC/SADT] or on a port/starboard minimum thirty day Temporary Additional Duty rotation with one day relief overlap."<sup>22</sup> It appears that 1990 planners had recognized and addressed the turnover problems that had handicapped the previous year's operations.

Where the urgencies of 1989 had necessitated getting personnel to the spill area without delay, in 1990, the FOSC's deputy chief of staff (administration) took a more proactive role in the personnel selection process. As a result, the "final authority" regarding who would receive orders to join the response staff moved from G-P, to the FOSC leadership. The net result was that the quality and stability of the organization benefited.<sup>23</sup>

The forty members of the active duty Coast Guard who served in the 1990 summer response contributed an estimated 3,091 duty days, or 38.5 percent of the total Coast Guard effort, compared to 68.8 percent in 1989. The other positions were staffed by reservists. A total of sixty-five reservists served in the 1990 summer spill response. Of these, forty-six (or 70.7 percent) were veterans of at least one previous assignment. The average length of stay among the reservists who served in the 1990 summer response was nearly four months. Twenty of the ninety-three billets experienced no turnover at all, due to the availability of long-term reservists who stayed for the entire period.<sup>24</sup>

Continued reserve participation in the spill response permitted additional development of skills for assisting in future spills. Increasing the pool of response-capable personnel, through substantial reserve participation in the *Exxon Valdez* cleanup, was a goal shared by both Vice Admiral Robbins and Rear Admiral Ciancaglini.<sup>25</sup> The 7,144 reserve man-days (an estimated 61.5 percent of total) expended during the 1990 summer response serves as an indicator of how strongly the response was trending toward greater reliance on the reserve component.<sup>26</sup>

Staffing proved far less difficult in 1990 and 1991. Staff planners were now familiar with those who had served during the previous year, and could invite those who had proven to be most dependable to return to Alaska for another assignment. In 1990, a total of 109 individuals with experience during the previous year again served in the FOSC operations.<sup>27</sup> Procurement of staff for the FOSC was centralized within the newly created *Exxon Valdez* response cell, located at U.S. Coast Guard Headquarters Officer

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22. Commandant (G-C), message to FOSC, 23 Feb. 1990, no. W1595, FOSC Exxon Valdez Archive.

23. Comdr. D. Maguire, conversation with Lt. Comdr. R. Gaunt, 29 Jan. 1992, no. F788, notes, FOSC Exxon Valdez Archive.

24. Commandant (G-PO-2C), "Spring/Summer 1990 Reserve Support Survey" (part of facsimile to FOSC [Anchorage]), 1 Mar. 1990, no. W722, FOSC Exxon Valdez Archive.

25. Rear Adm. D. Ciancaglini and Vice Adm. C. E. Robbins, interview by Dr. T. Leschine (FOSC staff), Comdr. D. Maguire, and Lt. Comdr. R. Gaunt, Anchorage, 10 Sept. 1991, no. F106, tape, FOSC Exxon Valdez Archive.

26. Commandant, memorandum to Distribution, 10 Oct. 1991, no. F713, FOSC Exxon Valdez Archive. See enclosure no. 1, "Reserve Support to FOSC Anchorage: Overview by Seasons."

27. USCG, "FOSC Exxon Valdez Personnel Report."

Personnel Division (G-PO), in February of 1990.<sup>28</sup> That office continued to serve this procurement function through the remainder of the response.

### 1991 CLEANUP SEASON

The FOSC continued its increased reliance upon experienced reservists for meeting 1991 summer staffing needs. The staff was composed of ten members of the active duty Coast Guard component (eight of whom had previous *Exxon Valdez* experience), and thirty-four reservists (all but one with prior *Exxon Valdez* background).<sup>29</sup> Staffing was very stable with nearly all of the billets being filled on a for-the-duration basis. In the 1991 summer operation, the total number of response man-days amounted to 5,630, of which 75.4 percent were served by reservists. Rear Admiral Ciancaglini, though remaining as FOSC, turned over his Anchorage office spaces to his staff late in the summer months. Until late in the life of the organization, Admiral Ciancaglini commuted from Juneau to Anchorage as needs arose, otherwise maintaining regular contact with his staff via telephone.<sup>30</sup>

### 1992 CLEANUP SEASON

At a meeting held at CGD 17 headquarters in January of 1992, plans were made for concluding Coast Guard involvement in the response. The FOSC summer operations staff would consist of six individuals who would carry out Coast Guard participation in field activities. Most of these individuals would be brought to the FOSC on short term orders, probably in the forty-five to sixty-day range. A few areas needing cleanup might be found among the sixty-plus sites scheduled to be evaluated, requiring Coast Guard shoreline monitors.

### THE ROLE OF RESERVISTS

Given the Coast Guard-wide shortage of trained spill response personnel in 1989, an obvious source of assistance was the pool of approximately twelve thousand Coast Guard reservists. Large numbers of reservists participated in the 1989 response. While some reservists brought relatively weak oil spill backgrounds to the response, many made useful and important contributions.<sup>31</sup> Reservist participation not only helped to provide needed manpower, but also brought technical skills that ranged from law and finance to biology and sociology.

The G-M planners realized quickly that it would be necessary to look to reserves for additional help. In early May 1989, a junior officer was assigned responsibility for

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28. Lt. Comdr. J. Adamek, interview by Lt. Comdr. R. Gaunt, Anchorage, 24 Aug. 1992, no. F662, tape, FOSC Exxon Valdez Archive.

29. USCG, "FOSC Exxon Valdez Personnel Report."

30. Rear Adm. Ciancaglini was relieved of his command in June 1992, and moved to U.S. Coast Guard Headquarters to assume a new assignment there. Comdr. D. Maguire became FOSC at that time.

31. Capt. D. Zawadzki, interview by Lt. Comdr. R. Gaunt and BM1 R. Travis, Anchorage, 31 Jan. 1992, no. F185, tape, FOSC Exxon Valdez Archive. Captain Zawadzki, FOSC chief of staff for much of 1989-90, observed that quite often reserves don't know the regulations, and they haven't been involved in significant spills. "That's something you don't develop even within a few weeks, but there are other jobs where their talents, whatever they were, were very useful and they didn't need all that background," noted Zawadzki. Job lists noted the ones that required a more experienced person, and those where reservists might fit in.

coordinating reserve participation in the spill.<sup>32</sup> During the first six months, the number of reserves who had participated in the spill cleanup rose to approximately four hundred, or about one-third of all Coast Guard personnel who ultimately took part in the response effort.<sup>33</sup> Several benefits were found in dealing with reservists, including easier availability (it was not necessary to plead with a unit commander who also had a crucial need for the same individual), and the reserve member was often found able to remain on assignment longer than a comparable regular.<sup>34</sup> Coast Guard reservists worked a total of 8,365 staff days during the period between 1 April and 25 September 1989.<sup>35</sup> The availability and staying capacities of reservists helped to strengthen the stability of operations, both in the field and in support roles as well.

TABLE 22.2

Where They Came From:  
Home Districts Of Reservists Who Took Part In The 1989 Exxon Valdez Summer Response.

Coast Guard District	No. Of Units Sending Members	No. Of Reservists In Response	% Of Reservists In Response	District Strength (est. 1989)	% Of Reservists In District
Pacific Northwest (13th)	21	112	28.6	1,000	11.2
Middle Atlantic (5th)	34	68	17.3	1,750	3.9
Pacific Southwest (11th)	29	53	13.5	1,650	3.2
Central United States (2d)	15	45	11.4	1,000	4.5
Great Lakes (9th)	12	28	7.1	1,200	2.3
Gulf Coastal Area (8th)	11	28	7.1	1,200	2.3
Northeast (1st)	24	27	6.9	2,400	1.1
Southeast (7th)	11	15	3.8	1,500	1.0
Alaska (17th)	2	11	2.8	75	14.6
Hawaii (14th)	3	5	1.2	200	2.5
<b>Totals</b>	162	392	99.7*	12,625	—

Source: USCG, "FOSC Exxon Valdez Personnel Report."

Note: Figures in column 3 (% of reservists in response) reflect the proportions of the 1989 reservist work force which came from each Coast Guard district. The figure for the Thirteenth District means, therefore, that 28.6 percent of all reservists who took part in the 1989 response came from Coast Guard District 13.

\*Total value slightly less than 100 percent due to rounding of numbers to the nearest tenth.

The skills developed by reservists during 1989 summer operations would prove to be of value to the FOSC throughout the response, as the pool of experienced reservists came to be drawn upon increasingly in the following years.<sup>36</sup> The FOSC staff came to be

32. Johnson, memorandum to chief officer of personnel division.

33. FOSC personnel list, information contained in UNISYS database, summer 1991. The figures refer to 1989 participation, not the entire duration of the response.

34. Data is calculated from the "FOSC Exxon Valdez Personnel Report," 12 June 1991. In a random sample study of individuals who were active in the spill, reservists stayed an average of 66.1 days compared with 38.8 days served by active duty counterparts.

35. PA1 K. Potter, "Exxon Clean Up Summary," *The Coast Guard Reservist* 38 (Jan. 1991): 16.

36. Ciancaglini, interview, 24 Jan. 1992.

composed of a very high percentage of reservists—for example, 87 percent (seven of eight assigned) during the winter 1991–92.

Table 22.2 shows that reservists and reserve units from across the country did not participate equally in the response. Some of the geographic imbalance across sending districts defies simple explanation.

In assessing the role of reservists in the response, Commander Marc Pettingill of G-MP noted that the use of reserve personnel also helped minimize disruption to the rest of the Coast Guard's operations. "The reservists did an incredible job. I would judge that the response would have been impossible without the contribution of members of the reserve," he said.<sup>37</sup>

Reservists were often flexible in terms of being able to extend their stays, and their absence from home units did not pose the kind of problems that affected active duty components. If reservists accepted orders that were subsequently canceled or shortened, however, they sometimes found themselves regretting their decision to volunteer for the cleanup. Arrangements with civilian employers to be absent from normal job assignments often meant that another worker was given the reservist's responsibilities while the reservist was away. If the reservist was released early due to changing response workloads, that person, the temporary worker, and the employer were each confronted with unplanned adjustments. Inevitably someone would suffer the consequences. This difference between regulars and reservists with respect to alternative employment options appears not always to have been fully appreciated by Coast Guard detailers.

## OTHER PERSONNEL ISSUES AND PROBLEMS

A number of personnel issues arose during the course of the response. This section addresses some of the more salient issues and problems.

### THE SPILL AS AN "M" RESPONSIBILITY

The Coast Guard normally treats oil spills as "M" related activities. It is within the U.S. Coast Guard Headquarters Office of Marine Safety, Security, and Environmental Protection (G-M) that expertise for dealing with oil spills tends to be found.<sup>38</sup> Thus, the emphasis in seeking personnel to participate was oriented towards requiring "M" experience.<sup>39</sup> The "M" directed emphasis (as opposed to the spill being seen as a Coast Guard project) may have created two distinct problems. First, it limited the pool of personnel from which to choose, and therefore, to build a staff. Second, it sometimes brought qualified "M" personnel into positions that might more effectively have been filled by persons from other specialties. For example, a highly skilled marine safety expert might be brought to Alaska (following substantial debate back at his/her

37. Pettingill, interview, 8 Sept. 1992.

38. "M" refers to the U.S. Coast Guard Headquarters Office of Marine Safety, Security, and Environmental Protection, whose designation in the U.S. Department of Transportation is G-M. Specialists in pollution response are concentrated within the "M" Program.

39. Johnson, memorandum to chief officer of personnel division.

permanent duty station), only to learn that the task was to fill an administrative assignment. Such arrangements did not facilitate efficient operations, as the individual involved would not be comfortable in the unfamiliar post, while back home the MSO commanding officer was left to wonder why the need for his key person had been so great.

The impact of treating the spill as an “M” problem was heightened by the ongoing reallocation of Coast Guard resources and priorities that had been taking place for several years before the *Exxon Valdez* oil spill. The Coast Guard’s 1988 budget allocated only 12.5 percent of expenditures to marine safety and marine environmental protection activities. The “M” share of the entire Coast Guard budget had dropped 1.2 percent when compared to 1984 (figure 22.3). In the interim, the most important change in priorities was the increased emphasis on law enforcement, principally related to drug interdiction. Where the 1984 budget had 33 percent allocated for drug interdiction, by 1989 the share had escalated to 38.6 percent.<sup>40</sup> Leaner fiscal times in the “M” divisions, therefore, translated into fewer persons being available in the field, and into a shortage of individuals not so critically needed at various MSOs that they might be spared for prolonged service in Alaska. Working MSOs were simply not in a good position to serve as a primary source for help in the *Exxon Valdez* response.

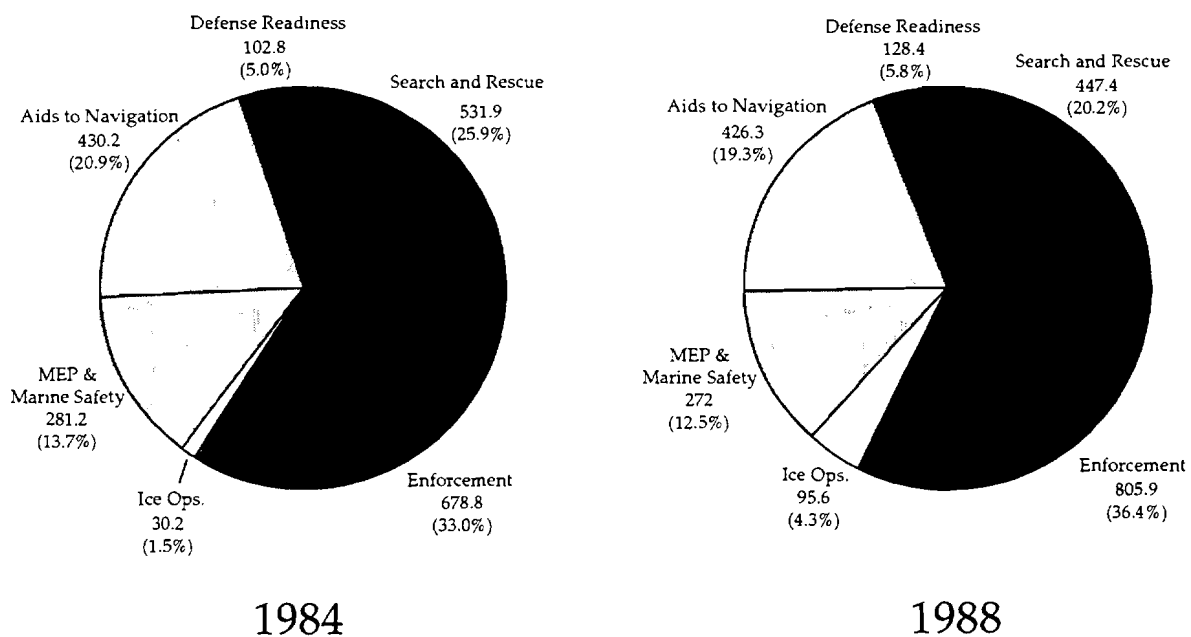


Figure 22.3. USCG budget allocations (in millions of dollars) for fiscal years 1984 and 1988.

Source: U.S. Coast Guard Headquarters Public Affairs, “FY ‘93 Budget.”

Owing to these budgetary constraints, the Coast Guard had a shortfall of forty to fifty officers in its “M” program at the time of the spill. Even if the spill had not occurred, there would have been personnel problems within the “M” community. Larger units in particular found that vacancies in key positions were straining both workloads and

40. USCG Headquarters Public Affairs, “FY ‘93 Budget,” *Commandant’s Bulletin*, no. 11 (Nov. 1992): 30.

personnel. "It just makes for a difficult position all the way across the country," observed one U.S. Coast Guard Headquarter's authority.<sup>41</sup>

In 1989, there was not only a general shortage of personnel in the marine safety program, but significant numbers within those ranks were also due for rotation during the summer months.<sup>42</sup> Additional reluctance to provide personnel was generated by fears that those who were "loaned" to the cleanup operation might be extended beyond a normal period of duty.<sup>43</sup> As one observer described the problem, the Coast Guard lacked "surge capacity" to deal with unanticipated heavy demands that are placed upon its personnel system by an event such as a large-scale spill.<sup>44</sup>

The recognition by response leaders that rapid turnover of staff was causing stability problems led them to specify longer orders for those detailed to the spill. But the gain in stability within the FOSC organization was not without cost elsewhere in the organization. It became more difficult for detailers to locate individuals who could be spared for longer durations. One "M" detailer reported that it was sometimes necessary to spend "an entire day on the phone" simply to fill a single billet.<sup>45</sup>

#### SURGE CAPACITY AND OTHER MANNING ISSUES

Within the first week of the oil spill the Coast Guard had called in all the "normal" resources for a response. It was obvious that significant additional personnel resources would be needed (figure 22.4). The difficulty in locating and acquiring properly skilled and trained personnel highlighted the Coast Guard's lack of surge capacity for an oil spill of this magnitude. Rather than an organized call up of specifically identified personnel, a search for "volunteers" was undertaken.

As would be expected, a high proportion of the personnel based in CGD 17 (Alaska) found themselves directly assigned to tasks related to the spill (table 22.3). Thirty-three participants were staff members or cadets from the Coast Guard academy, while an additional thirty persons came from the U.S. Coast Guard Headquarters staff. Significant numbers of personnel came from the various group staffs<sup>46</sup> with ten or more coming from each of the 2d, 7th, 11th, 13th, 14th, and the 17th. MSOs that provided the larger numbers of participants were Hampton Roads (11), Morgan City (10), New Orleans (12), and Anchorage (28), as well as the entire Valdez staff.<sup>47</sup>

The spill provided an unexpected training opportunity for cadets from the U.S. Coast Guard Academy. Although the academy had originally been reluctant to revise its summer training plans to accommodate the oil spill response, cadets were brought to

41. Comdr. D. Lentsch, interview by Lt. Comdr. R. Gaunt, Washington, D.C., 28 Aug. 1991, no. F108, tape, FOSC Exxon Valdez Archive.

42. Ibid.

43. Lt. Comdr. J. Adamek, interview by Lt. T. Staats, 5 Aug. 1991, no. F173, notes, FOSC Exxon Valdez Archive.

44. Comdr. E. P. Thompson, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, and Lt. T. Staats, 19 July 1991, no. F165, FOSC Exxon Valdez Archive.

45. Pettingill, interview, 8 Sept. 1992.

46. A Coast Guard "group" is an intermediate level command overseeing units and vessels within a specific geographic area. Coast Guard Group New York, or Coast Guard Group New Orleans, for example.

47. USCG, "FOSC Exxon Valdez Personnel Report."



the FOSC and assigned various jobs both ashore and in the field. This was later judged to have been an outstanding success. Cadet exposure to marine safety activity, their participation in an important event, and the contributions made by the individuals involved were considered to be beneficial results of the experience. For example, two cadets who had been leaning towards resigning from the academy revised their thinking, following their oil-spill experiences, and remained within Coast Guard ranks.<sup>48</sup> A total of thirty-one academy cadets served within FOSC operations in 1989, eight in 1990, and four in 1991.<sup>49</sup> In addition to cadets, two members of the academy's permanent staff filled operational billets during portions of the summer period.<sup>50</sup>

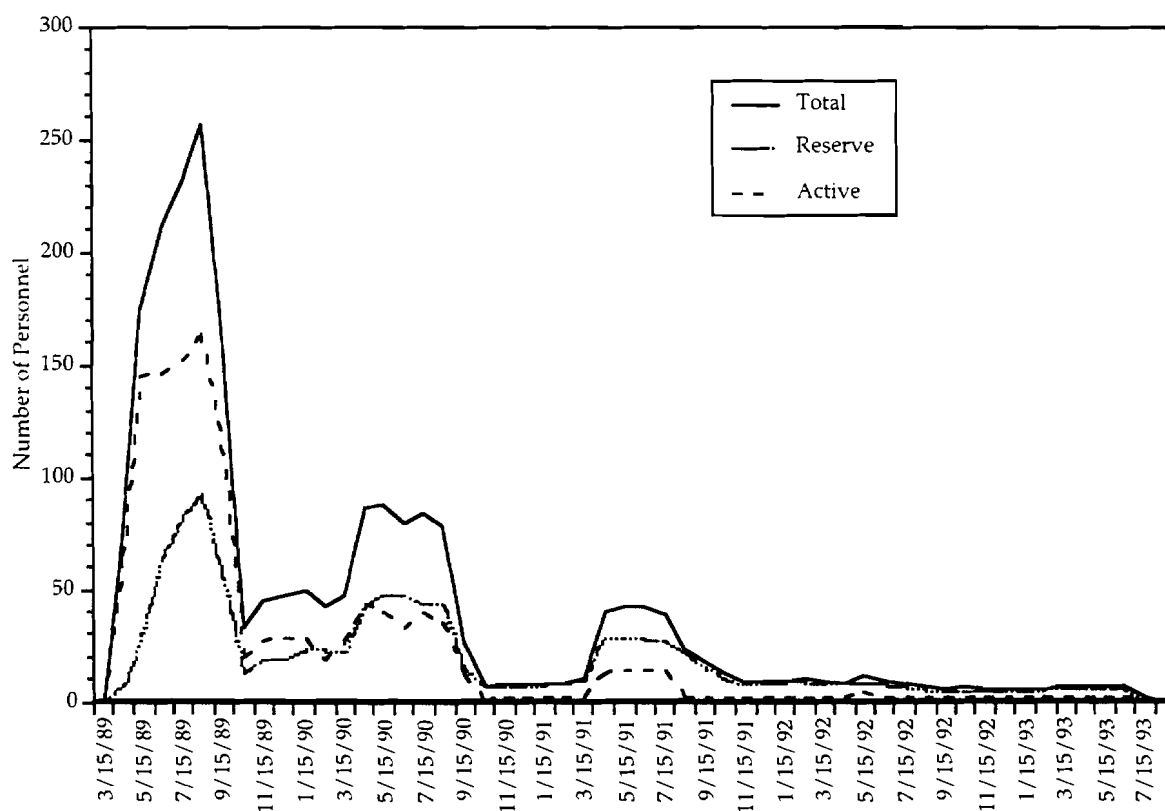


Figure 22.4. Build-up of USCG personnel (reserve and active duty) based on numbers billed directly to the 311 (k) fund. The total number of personnel was actually 349 or higher. The number of billets peaked at 349, and in some cases one billet was filled by two individuals (e.g. during a period of overlap).

There were unverified reports of problems in the field resulting from insufficient numbers of personnel being available to fill in during emergencies (i.e. replacing an injured monitor, for example). The unavailability of a healthy substitute reportedly resulted in personnel who were scheduled for rotation being required to remain in the field. If the report is accurate, it suggests a need for greater flexibility in the personnel

48. USCG, "G-MER Conference Report," ch. 8, sec. 1, 69.

49. USCG, "FOSC Exxon Valdez Personnel Report."

50. Lt. Comdr. T. Haas (23 July 1989–13 August 1989) and Lt. Comdr. T. Reilley (12 June 1989–1 July 1989 and 10 June 1990–13 July 1990).

system, with additional personnel being available for unanticipated temporary situations.

Field monitors were typically assigned to eight-member work units. In the view of one field operations manager, once such groups were formed, greater efforts should have been made to keep them reasonably intact at all times while in the field. Instead, berthing accommodations often required groups to be separated into two or even three different vessels during parts of the day when they were "off duty." Not only was off-hour group interaction not possible, but it was also necessary to make two or three stops in order to assemble the group for the next day's activities.<sup>51</sup>

TABLE 22.3

Where They Came From; Home Districts of Active Duty Coast Guard Who Took Part in the 1989 Exxon Valdez Summer Response.

Coast Guard District	No. Units Sending Members	No. Of Active Personnel In Response	% Of Active Personnel In Response	District Strength (est. 1989)*	% Active Personnel In District
Alaska (17th)	11	147	20.4	1,440	10.2
Gulf Coastal Area (8th)	16	61	8.4	2,800	02.2
Southeast (7th)	15	51	7.1	4,000	01.3
Middle Atlantic (5th)	14	46	6.3	2,500	01.8
Pacific Southwest (11th)	9	42	5.8	1,850	02.3
Pacific Northwest (13th)	10	41	5.7	1,600	02.6
Great Lakes (9th)	15	38	5.3	2,100	01.8
Northeast (1st)	13	36	5.0	3,000	01.2
Hawaii (14th)	8	30	4.1	1,000	03.0
Central United States (2d)	8	26	3.6	800	03.2
Misc. Units <sup>†</sup>	36	201	27.9	—	—
<b>Totals</b>	<b>155</b>	<b>719</b>	<b>99.6 ‡</b>	<b>—</b>	<b>—</b>

Source: USCG, "FOSC Exxon Valdez Personnel Report."

\* Based on data sent by G-CP, 11 Oct. 1991.

† Includes personnel from commands other than districts, such as strike teams, U.S. Coast Guard Headquarters, Coast Guard Academy, and others.

‡ Total value slightly less than 100% due to rounding of numbers to the nearest tenth.

## TURNOVER AND THE LACK OF CONTINUITY

Lack of continuity was one of the most serious defects in staffing for the response. The stability of work operations suffered from the frequent turnover of short-term personnel (both reserves and regulars), particularly during the spill's earliest days. As a movement toward thirty-day-minimum orders developed (with even longer commitments desired by supervisors in the field), work units stabilized. But the reluctance of commanding officers elsewhere to release key personnel for prolonged

51. Comdr. G. Reiter, interview by Lt. Comdr. R. Gaunt and BM1 R. Travis, Anchorage, 26 Nov. 1991, no. F146, tape, FOSC Exxon Valdez Archive.

periods became increasingly troublesome.<sup>52</sup> As new replacements arrived, often the tendency was to “reinvent the wheel,” as performance of the job was modified to fit the perceptions of its latest occupant. Since no formal job descriptions were available for most of the assignments in the response, this breakdown in continuity may have been a predictable result. “We had a revolving door...every month,” stated one strike team leader. “Continuity was a real hassle.”<sup>53</sup>

Leaders of other organizations, including state and federal agencies, municipal governments, and contract firms involved in the cleanup, soon learned that an effective strategy for dealing with Coast Guard decision makers, especially when the Coast Guard leader was seen as a “hard-line” figure, was simply to wait until that person was rotated, and hope that an individual who would be “easier,” or more flexible, would be assigned as the replacement.<sup>54</sup> The actual making of a decision could thus be postponed while the interests involved waited for a hopefully more pliable representative of the Coast Guard to enter the picture.

The FOSC was especially concerned with maintaining consistency, “both real and perceived” within upper levels of the response structure.<sup>55</sup> Special efforts were made to maintain stability, for example, in the FOSC Chief of Operations Office (where Captain Crowe and Captain Schmidtman rotated in the position), the FOSC chief of staff (Captain Zawadzki and Captain Alejandro), the finance and accounting area (Captain Anderson), and in National Strike Force leadership.

Among all of the personnel difficulties that emerged in the spill response during 1989, perhaps the frequent turnover problem was the most significant. During the phase down period of the 1989 operations, Captain Anthony C. Alejandro, then FOSC chief of staff, conducted a survey of personnel who had worked in the spill to develop insights from the perspective of those at the rank-and-file level. Although the sample was small, a perception clearly held by a substantial number of the persons surveyed was that the cleanup project had suffered as a result of too frequent turnover of members of the staff.<sup>56</sup>

Captain Alejandro’s survey findings were substantiated by participants at the December 1989 debriefing conference held in Washington. The issue of continuity of personnel was ranked as “critically high” in nearly every session held at the conference. “The high turnover of personnel created discontinuities in policy and administrative applications that served to confuse and disrupt operations,” concluded the report. “Managers were also frustrated because their personnel turned over so rapidly and they could not improve the situation,” it continued.<sup>57</sup> There is no doubt that the revolving-door character of the personnel system created major problems for Coast Guard spill response management throughout much of the first six months of operations.

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52. Adamek, interview, 5 Aug. 1991.

53. USCG, “G-MER Conference Report,” ch. 4, sec. 1, 19.

54. Comdr. D. Maguire, conversation with Lt. Comdr. R. Gaunt, 9 Oct. 1991, no. F791, notes, FOSC Exxon Valdez Archive. Maguire related experience with Mayor Brodie of Kodiak.

55. Ciancaglini and Robbins, interview, 10 Sept. 1991.

56. Capt. A. C. Alejandro, memorandum to chief of staff, 24 Sept. 1989, no. W2623, FOSC Exxon Valdez Archive.

57. USCG, “G-MER Conference Report,” ch. 4, sec. 1, 18.

## BURNOUT

Work days were often long and exhausting for Coast Guard personnel. Reports of fifteen to sixteen hour work schedules, for extensive periods of time, were not uncommon. Nevertheless, morale and work performance held up rather well, according to a key field supervisor.<sup>58</sup> Debriefing conference participants observed that normally five personnel would be required to fill a twenty-four hour, seven-day week billet. For this operation the Coast Guard met the criteria using one person. Vice Admiral Robbins, in reflecting upon the work that was done by Coast Guard personnel, observed: "Can anyone imagine running this operation with a civil service system, legally? There's no way." But a more desirable arrangement, in the view of Robbins, might have been to emulate the Exxon formula, which specified that thirty days of hard work in the field would be followed by a period of rest and recovery before the next return to duty.<sup>59</sup> In 1990, the Coast Guard used a similar arrangement for field-based personnel, and found it to be quite helpful as a means of maintaining the morale and productivity of those involved.<sup>60</sup>

## IMPACT ON COAST GUARD OUTSIDE OF FOSC

When U.S. Coast Guard Headquarters recognized the need for substantial numbers of additional personnel to assist in the response, a special task force was established to locate and provide a staff. The added assistance was especially welcomed since burdens at G-M had rapidly expanded since 24 March. Not only was there a substantial increase in personnel procurement, but another G-M function had compounded tenfold. In 1988, G-M had answered sixty congressional inquiries for information. In 1989, the number swelled to six hundred, about 99 percent of them related directly to the *Exxon Valdez* oil spill.<sup>61</sup>

A less conspicuous, but nonetheless troubling, personnel problem existed within the Coast Guard finance and accounting community in 1989. As had been the case in other operations, the system had been downsizing during recent years as a result of budgetary constraints. Seven years earlier, for example, each Coast Guard district had its own fund managers, contracting officers, and accounting staffs. But these functions had been shifted to the two maintenance and logistics commands (Atlantic and Pacific areas) by 1989. When the *Exxon Valdez* response began, the Pacific Area Maintenance and Logistics Command (MLCPAC) became the only entity with sufficient capacity to oversee FOSC fiscal operations.<sup>62</sup>

The MLCPAC staff found itself faced with the need to assume the lead role in FOSC contracting and accounting support in addition to maintaining its normal responsibilities. The total number of available contracting officers never exceeded five

58. Reiter, interview, 26 Nov. 1991.

59. USCG, appendix to "G-MER Conference Report."

60. Capt. D. Zawadzki, interview by Lt. Comdr. R. Gaunt, Anchorage, 20 Feb. 1992, no. F187, notes, FOSC Exxon Valdez Archive. Capt. Zawadzki added that "officers were instructed to take at least one day off as well [per week], 'as an example' that we are all taking occasional breaks."

61. Pettingill, interview, 8 Sept. 1992.

62. A. Thuring (National Pollution Funds Center), written comments submitted to FOSC, 6 Aug. 1992, no. F717, FOSC Exxon Valdez Archive.

or six, including Captain Ralph Anderson, the division chief. No additional personnel were detailed to MLC PAC for the 1989 bulge of activities. Understandably, the command was not able to detail any of its contracting officers to Alaska where they might have helped to head off accounting problems before they began. Some assistance was obtained from augmenting reservists during the winter months, 1989–90, but the experience unquestionably stretched Captain Anderson's small staff to its limits.<sup>63</sup>

#### FTEs

In 1992, reflecting insufficient full time equivalents (FTEs), U.S. Coast Guard Headquarters placed a general Coast Guard-wide restriction on the use of reserve personnel for temporary active duty assignments.<sup>64</sup> Tentative FOSC plans to bring back reservist staff members who had served previously, thus, needed to be changed. It became necessary instead to get personnel loaned from regular Coast Guard commands.<sup>65</sup> The FOSC required that operations personnel be Technical Advisory Group (TAG) experienced, and this condition was met with active duty personnel. Those selected for 1992 participation proved to be well prepared for their assignments.

#### FISCAL ASPECTS OF PERSONNEL PROCUREMENT

#### TONOs

The rush to detail personnel from other districts to the response area also created an accounting problem. Travel order numbers (TONOs) were written against normal operating funds instead of the Pollution Fund. As a result, the Coast Guard's automated accounting systems could not differentiate between *Exxon Valdez* orders and orders issued for other functions within the same command. This resulted in complications within the finance and accounting network that ultimately necessitated the hand sorting of documents so that spill-related personnel costs could be charged against the Pollution Fund and eventually the spiller, Exxon.<sup>66</sup>

Multiple sources of orders caused further complications for financial managers of the spill. Three separate funding sources were being specified by various authorities. Districts sending active duty Coast Guard personnel usually employed operating expense (OE) funding. When reservists were sent, reserve training funds were normally used. Still, others used direct Pollution Fund charges. In the aftermath of the initial flurry of activity, funds that had been committed from OE and reserve training accounts should have been recovered through "charge-backs" to the Pollution Fund. But often no such chargebacks were made. In addition, some orders were issued with no estimated costs. Hence, there were no initial obligations made within the accounting system, further complicating the task of identifying accounts where chargebacks should have been made. Those issuing orders felt there was often

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63. Ibid.

64. Full time equivalent (FTE) is the government's method of allocating personnel resources and funds. The Coast Guard is allocated by Congress a level of FTE that establishes the personnel ceiling for the Coast Guard.

65. Additional personnel for the 1992 season consisted of three individuals, two of whom came from the Pacific Strike Team, and one from MSO New Orleans.

66. Thuring, written comments, 6 Aug. 1992.

insufficient time to make accurate cost estimates. When orders without complete accounting data were issued, it was expected that the accounting system could recover cost information at a later date. But that assumption did not prove to be valid.<sup>67</sup>

When charges against orders that carried no obligated funds figures “came in” against the TONOs involved, they were paid and recorded by the issuing office. The next step called for forwarding these charges to the Pacific Area Maintenance and Logistics Command, (f), for certification and reimbursement. But automated accounting systems could not be used to identify specific documents, and thus the process was entirely manual, both at the issuing command and at MLC PAC offices. The sheer volume of spill related charges overwhelmed the system, and as a result, not all reimbursement payments were actually paid.<sup>68</sup>

#### PAYROLL CONSIDERATIONS

Pay problems, particularly for short-term reservists, caused an occasional complaint, as they sometimes led to personal cash flow problems. Often, reservists serving twenty-one to thirty day temporary active duty assignments completed those orders and returned home before receiving a paycheck. In order to assure that the payroll system had the capability to service both the reserve pay system and that of the active duty component, a pay section was organized in Juneau, at the CGD 17 headquarters. It consisted of finance personnel from both reserve and active duty elements.<sup>69</sup> A reserve chief petty officer/storekeeper (SKC) from the 11th Coast Guard District was activated to begin a reserve payroll program on 15 May. The first such payroll (30 May) serviced forty-two reservists, some of whom were serving two-week annual active duty for training (ADT) requirements. It was never possible, according to the SKC, to provide paychecks on the normal biweekly basis during the 1989 period; thus, monthly arrangements were made instead. Except for a short period during the summer months in 1989, the same individual remained on staff to serve reserve payroll needs for almost the entire life of FOSC activity.<sup>70</sup>

Finally, personnel who were responsible for pay management reported that the lack of consistency, throughout the Coast Guard, in the issuance of orders for reservists, necessitated many hours of additional work for the payroll section. Different procedures in the various districts for pay advances, in structuring orders, and in furnishing required endorsements, all contributed to problems in the pay process.<sup>71</sup> It appears that difficulties in “meshing” reservists’ pay with that of the active duty component was an ongoing problem. In fact, it was found necessary to activate two reservists specifically to process the reserve payroll. The measure was, according to a

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67. Ibid.

68. Ibid.

69. SK1 B. J. Newman, interview by Lt. Comdr. R. Gaunt, Anchorage, 19 Aug. 1991, no. F169, notes, FOSC Exxon Valdez Archive.

70. SKC A. Palileo, monograph report submitted to the FOSC historian staff, 27 Dec. 1991, no. F168, FOSC Exxon Valdez Archive.

71. Newman, interview, 19 Aug. 1991.

reserve chief petty officer assigned to the payroll section, partly due to the increased workload, but it was also due to a lack of understanding of the reservists' pay system.<sup>72</sup>

## LOGISTICAL AND ADMINISTRATIVE ASPECTS OF PERSONNEL

### PERSONNEL RECEPTION

Faced with a need to bring several hundred individuals from all parts of the nation into the response operation, the Coast Guard brought personnel to Anchorage, which is served by a major airport, and dispatched them to work sites from that point. Typically, the new arrival would be berthed overnight at an Anchorage hotel, then report to the marine safety office, where a small FOSC detail augmented the MSO staff. There, new arrivals were logged in, assisted in obtaining cash (per diem) advances, issued the necessary gear, and provided with transportation to work locations. When personnel had completed orders and were departing from assignments, it was necessary to pass through the same center to return equipment and to complete required checkout procedures.<sup>73</sup>

The system that was employed to receive incoming personnel was the subject of criticism at the 1989 debriefing conference. "MSO Anchorage was extremely busy then, doing their regular job. They were doing our receiving and that was a loose operation," observed one participant. "When I arrived the only guy that knew that I was coming and had any idea of where I was going was an SK3." There seems to have been a sense among conference participants that a dedicated cadre, operating independently from the MSO and representing the FOSC, tasked with receiving, indoctrinating, and detailing incoming personnel, might more effectively have served the needs of the moment.<sup>74</sup>

### BERTHING ACCOMMODATIONS

Finding housing for personnel, particularly in Valdez, presented challenges for Coast Guard leaders. Housing space was at a premium in that community, owing to the fact that the population had swelled from the usual three thousand to a level approximately three times that size. The shortage necessitated innovative measures. Thus, Coast Guard lodging came to consist of such commercial lodging as could be found, some reopened facilities in the off-base Coast Guard housing area, use of a lodge located eight miles from Valdez, and a number of recreation vehicles that were grouped in a local campground.<sup>75</sup> Rear Admiral Nelson, recalling his first days in Valdez, in March of 1989, reported that he slept in four different rooms during the first four nights there.<sup>76</sup>

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72. Palileo, monograph report, 27 Dec. 1991.

73. At the time of this writing several individuals who were assigned to the MSO in 1989 remained in Anchorage (Lt. Comdr. Gaunt, YN1 Slota, YN3 Marlow, SK1 Edmondson). These individuals describe the reported format as being accurate.

74. USCG, "G-MER Conference Report," ch. 5, sec. 6, 43.

75. Members of the historian staff toured the Valdez area during a visit on 18 July 1991. Included was an orientation of all facilities used by the Coast Guard, both for operational and logistical purposes.

76. Rear Adm. E. Nelson, interview by Lt. Comdr. R. Gaunt, Anchorage, 15 Aug. 1991, no. F176, notes, FOSC Exxon Valdez Archive.

Fortunately for the Coast Guard, a senior chief on the MSO Valdez staff, whose wife had previously been employed by one of the local motels, used his connections and local knowledge to obtain housing space for the duration of the response. Later, when additional space was needed, the same persons helped to persuade the owner of the "Lake House" to open that facility. As many as twenty persons were able to be housed there, though it had the disadvantage of being located miles from the center of FOSC activities. Opening unoccupied housing space in the Coast Guard's family housing area also proved to require substantial effort. The task of readying those facilities included the need to locate furnishings.<sup>77</sup>

#### MESSING ARRANGEMENTS

Feeding spill cleanup personnel was much less a problem than was the matter of finding places for them to live. Initially the galley at MSO Valdez was used, but as the number of personnel and complexity of operations grew, it became evident that other meal arrangements would be needed. Those who were assigned to shore side locations were provided a partial per diem allowance that ranged from \$50–\$73 per day, depending upon relative living costs at the various duty locations. The amounts that were provided normally proved to be adequate, despite local prices which escalated rapidly when communities in the spill region experienced a "boom town" growth.

Meals and lodging for personnel in the field were, of course, provided on vessels that were situated near the various work sites. Conditions on those facilities while sometimes crowded, were considered as being at least minimally acceptable.<sup>78</sup> Those aboard vessels, though not entitled to per diem allowances (as was the case with shore side personnel), were provided a small incidental allowance in addition to regular pay.

#### AWARDS

In the aftermath of the *Exxon Valdez* operation, the Coast Guard conferred a substantial number of personal awards to participants. For example, Captain David Zawadzki (FOSC chief of staff 1989–90) was honored with the Legion of Merit Medal, the highest honor conferred upon any individual who participated. As of summer 1991, a total of 263 letters of appreciation had been issued, 74 Commandant's Letter of Commendation Medals had been given, 30 Coast Guard Achievement Medals, 17 Coast Guard Commendation Ribbons, and 3 Meritorious Service Medals had been conferred upon individuals who contributed to the spill response effort.<sup>79</sup> In addition, several hundred Coast Guard Special Operations Service Medals were awarded. A priority was made to see that ribbons were conferred before departure from FOSC duties, and that arrangement was standard throughout most of the cleanup season.<sup>80</sup> At least five unit awards were conferred, including one Coast Guard Meritorious Unit Commendation

77. RDCS B. Mooers, interview by Lt. Comdr. R. Gaunt, Anchorage, 15 Oct. 1991, no. F170, notes, FOSC Exxon Valdez Archive. Mooers credited CPO Sikoulis for being particularly resourceful in carrying out this operation.

78. SKC A. Palileo, conversation with by Lt. Comdr. R. Gaunt, 13 Sept. 1991, no. F790, notes, FOSC Exxon Valdez Archive.

79. A detailed record of all awards conferred to attached personnel is maintained at FOSC headquarters. Several editions have been published, owing to new additions needing to be made. The reference used in this case was 29 May 1991.

80. FOSC (Anchorage), memorandum to commander, Seventeenth Coast Guard District, 19 Apr. 1990, no. W844, FOSC Exxon Valdez Archive. Award recommendations of 1989 Exxon Valdez Oil Spill Response.



(USCG Cutter *Sweetbriar*), and four Coast Guard Unit Commendations that were issued to MSO Anchorage, MSO Valdez, Air Station Kodiak, and the Coast Guard District 17 office.<sup>81</sup>

While there were substantial numbers of awards made during the full life of the FOSC, Vice Admiral Robbins found himself confronted with an awards dilemma in 1989. In his judgment, nearly everyone was doing a most outstanding job, and it seemed unfair to sort out some for special recognition, while risking others being overlooked. This was seen as a particular problem within an organization that was experiencing such a rapid turnover of personnel. As a result, the standard procedure was to confer the Special Operations Service ribbon to all eligible participants who met time-involved requirements. Later, after the 1989 flurry of activity, it was possible to provide individual awards on a more conventional basis.

#### DISCIPLINE

FOSC records show that no court-martials nor any non-judicial punishment incidents occurred involving individuals assigned to spill-related duties. In a very few incidents, individuals who were responsible for minor problems simply had orders terminated and were returned to their respective units.<sup>82</sup> Theoretically, there might have been a Uniform Code of Military Justice violation that would have required convening a court martial, or which could have necessitated non-judicial punishment. Since the FOSC organization is a temporary ad hoc operation, it had no operating facility number and it was not a conventional Coast Guard unit. It was determined, however, that Vice Admiral Robbins (and later Rear Admiral Ciancaglini), indeed held authority to provide for legal action had such a need arisen.

#### SUMMARY

The Coast Guard's organizational and personnel structure has proven successful over the years in dealing with a variety of emergency situations. Yet the *Exxon Valdez* oil spill demonstrated a number of shortcomings in the Coast Guard's ability to mobilize and support the personnel necessary to deal with an oil spill of unprecedented magnitude in a remote location and necessitating a response of multiyear duration.

The spill quickly outstripped the preplanned pool of personnel available for response, and the personnel staffing process was soon rife with confusion. Personnel managers not only had to procure a large number of individuals with specialized skills very quickly, but they had to confront a variety of unfamiliar uncertainties. The number of people that would ultimately be required was a moving target, and the duration of the response was unknown. In addition, the skills and specialties of the needed personnel weren't well understood until a billet structure was developed. The first months of the response proved to be a period of considerable strain for personnel managers.

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81. CWO Ronald Gillette, conversation with Lt. Comdr. R. Gaunt, 10 Oct. 1991, no. F789, notes, FOSC Exxon Valdez.

82. This statement is based upon a search of FOSC files that was conducted by BM1 R. Travis (FOSC historian), 19 Aug. 1991.

By the first anniversary of the spill, the majority of personnel problems had been identified and resolved. These included: a lack of "surge capacity," high turnover, limited continuity, a poorly defined pool of people to draw from, and an overly complex system for issuing orders. "Trial and error," combined with the diminished pace and scale of the response effort after 1989, led to successful solutions. The use of Coast Guard reservists in particular helped address problems with surge capacity, continuity and turnover. The FOSC and Coast Guard Headquarters Officer Personnel Division devised a personnel system that proved to be both efficient and timely in its ability to identify the right person for each position. The resolution of these major problems overshadowed a variety of other personnel issues that arose and were resolved in subsequent years.



## CHAPTER 23. FINANCE AND ACCOUNTING

### OVERVIEW

The cost of the cleanup for the *Exxon Valdez* oil spill exceeded \$2.1 billion. The size and the expense of the response so dwarfed any other cleanup as to make comparisons meaningless. With funds being expended at unprecedented rates, new systems for funding and reimbursement had to be devised to meet the challenge. The systems that were developed under the gun, have stood the test of time.

This chapter first examines fiscal matters that were dealt with under the Federal Water Pollution and Control Act (FWPCA), section 311(k). Next, the changes brought about by the settlement agreement are explored. Finally, the Coast Guard's handling of property acquisition and management is addressed.

Particularly noteworthy developments in the financing and accounting area include (a) Exxon's assumption of financial responsibility for the response and the subsequent working out of a "new" type of fiscal relationship between the Coast Guard and a responsible party; and (b) the Federal On Scene Coordinator's (FOSC) increased financial responsibilities following the state of Alaska/federal government/Exxon settlement agreement. The Coast Guard's ability to acquire and manage property exclusive of its relationship with Exxon is also of particular interest.

### FUNDING THE RESPONSE UNDER THE FWPCA, SECTION 311(K)

Regulations governing the funding of oil spill responses in U.S. waters are contained in 33 CFR 153. The rules specifically provide that, when a responsible party accepts responsibility for a removal action, as Exxon did, federal agency costs related to that response are reimbursable, subject to approval by the FOSC. A revolving fund (the pollution fund) has been established for this purpose under section 311(k), Federal Water Pollution Control Act, as amended.<sup>1</sup> At the time of the grounding of the *Exxon Valdez*, the pollution fund balance stood at just \$6.7 million.<sup>2</sup>

An important early consideration was to determine Exxon's "willingness and ability" to accept the financial obligations normally assumed by the responsible party. That matter was resolved when a statement was issued by Exxon on 24 March, just hours into the

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1. Regulations governing the use of the fund are contained in 33 CFR 153, 1 July 1988 revision. The 311(k) revolving fund was effectively transferred to the Oil Spill Liability trust fund, referred to in brief as the Trust Fund, created with the passage of OPA 1990, by OPA 1990's enabling legislation (26 U.S.C.A. 9509 [b][4]). The designation 311(k) comes from the section of the Federal Water Pollution Control Act (Clean Water Act), as amended (33 U.S.C. 1251 et seq.), 1988 edition, which created the fund.

2. U.S. General Accounting Office, "Adequacy of Preparation and Response to The Exxon Valdez Oil Spill" (furnished at the request of the House Committee on Merchant Marine Affairs and Fisheries, report no. GAO/RCED-90-44, 30 Oct. 1989), no. W1591, FOSC Exxon Valdez Archive, 18.

spill, stating that the corporation was prepared to assume financial obligation for the cleanup.<sup>3</sup>

With Exxon's assumption of responsibility, the company had to plan, execute, and underwrite a cleanup that would meet standards specified by the FOSC. The role of the FOSC was to monitor Exxon's efforts to assure that the cleanup would proceed in a satisfactory manner. The FOSC thus served as the federal government's chief agent in the response, with responsibilities that included approving, and assuring payment of, federal agency costs. In order to meet its cleanup obligations, Exxon eventually purchased equipment, supplies, and contract services, costing an estimated (at the time of settlement) \$2.1–2.2 billion.<sup>4</sup> More than \$100 million of these costs were costs incurred by the federal agencies and reimbursable through the 311(k) fund.

#### FEDERAL AGENCY RESPONSE INVOLVEMENT

Federal agencies present in the 1989 response included the U.S. Department of Defense, U.S. Department of Labor, U.S. Department of the Interior, U.S. Department of Commerce, U.S. Department of Agriculture, U.S. Department of Justice, U.S. Department of Health and Human Services, U.S. Department of Transportation, and the U.S. Environmental Protection Agency. Federal agencies accumulated \$110.1 million in costs during the initial (1989) summer (table 23.1). U.S. Navy activities accounted for the largest share (\$42.4 million) of spending by federal agencies, with the Coast Guard (\$38.7 million) not far behind.

The federal agency incurred costs, shown in table 23.1, should not be confused with overall 1989 cleanup costs, which were estimated to have been approximately \$1.8 billion. In addition to its Military Airlift Command costs, the U.S. Air Force billed Exxon for several additional and sizable expenses. These included use of decontamination units (used in shoreline cleanup work), flights of other than Military Airlift Command aircraft, and ancillary activities at Elmendorf Air Force Base (AFB). These, and minor additional add-ons, account for the U.S. Air Force "other" expense category in table 23.1.

#### ESTABLISHING A FUNDING MECHANISM

Exxon, as it assumed the role of responsible party, began purchasing and contracting for equipment, supplies, and services. Utilizing its comparatively expeditious procurement system, Exxon moved quickly to establish operations. In the meantime, the Coast Guard, in order to meet rapidly escalating federal cleanup costs, opened (on 24 March) FOSC access to the pollution fund. The FOSC not only assumed the role of supervising the Coast Guard's expenditure of funds, but the cleanup costs incurred by other federal agencies were also subject to FOSC approval prior to reimbursement

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3. A. Davidson, *In the Wake of the Exxon Valdez: The Devastating Impact of the Alaska Oil Spill* (San Francisco: Sierra Club Books, 1990), 31. Quote by U. Le Grange (senior vice president, Exxon).

4. This estimation was provided by Coast Guard FOSC budget managers on 20 June 1992. Figures reported by Exxon in its write-off of losses specified a \$2.4 billion amount.

through the 311(k) fund. Administration of the 311(k) fund proved to be a major area of responsibility for Coast Guard personnel.

TABLE 23.1

Distribution of federal agency costs for Exxon Valdez cleanup and removal, 1989.

Federal Agency	Dollar Amount (millions)	Percentage Of Total (%)
U.S. Coast Guard	\$38.7	35.15
U.S. Navy, Berthing Vessels	\$24.0	21.80
U.S. Navy, Skimmers	\$17.7	16.08
U.S. Army, (COE), Dredges	\$10.4	9.46
NOAA	\$4.0	3.63
USAF-Military Airlift Command	\$3.7	3.36
National Park Service	\$2.9	2.63
USAF, "Other" Expenses	\$2.6	2.36
U.S. Fish And Wildlife Serv.	\$1.4	1.27
U.S. Army Aeomedical	\$1.5	-†
Federal Aviation Agency	\$1.0	-
U.S. Navy, Landing Craft	\$0.7	-
U.S. Army, Oil Spotting	\$0.4	-
U.S. Army Crisis Center	\$0.4	-
Total Federal Expenses	\$110.1	100.00

Source: National Pollution Funds Center, Fund Management Survey for Exxon Valdez Case, 29 Sept. 1989.\*

\* Another report indicated a somewhat higher total of \$125.2 million in total federal expenses for the 1989 response. The GAO figures were close to the Coast Guard accounting data above (\$1.7 million apart—GAO showing the higher figure) when cleanup costs alone were considered. The GAO also included \$12.3 million in damage assessment figures and \$1.1 million for other expenses. In addition to the agencies named in the table, several other federal agencies incurred lesser costs, which were either negligible amounts or were not billed (U.S. General Accounting Office, "Federal Costs Resulting From the Exxon Valdez Oil Spill" [furnished to Congress by request, report no. GAO/RCED-90-91FS, 26 Jan. 1990], no. W1039, FOSC Exxon Valdez Archive).

† Dash (-) means amount is less than 1% of the total.

On the second day of the response, 25 March, the FOSC began receiving requests for 311(k) reimbursements. Among the first of these was a request from the U.S. Air Force, which had been asked to airlift skimmers, booming gear, and other needed cleanup equipment into Anchorage and Valdez. Under a memorandum of understanding between the Coast Guard's Pacific Area Maintenance and Logistics Command (MLCPAC) and U.S. Air Force Military Airlift Command, the Coast Guard issued a military interdepartmental purchase request (MIPR) which obligated funds and encumbered the 311(k) account.<sup>5</sup> A similar arrangement existed with the U.S. Navy,

5. The initial airlift flight took place on 27 March. Military Airlift Command C-5A *Galaxy* loaded and delivered 159,000 pounds of cargo to the response. During the first month of the spill, the U.S. Air Force flew fifty missions in support of the spill, moving 1,093.3 tons of cargo, plus an undetermined number of passengers (from USAF flight records).

thus providing for use of the U.S. Navy Supervisor of Salvage (SUPSALV) pollution response equipment.<sup>6</sup>

Costs associated with mobilizing Coast Guard personnel and assets for the spill response mounted quickly. The first day's Polrep (pollution report) asked for authorization of \$25,000 in 311(k) funds; the next day the request was increased to \$1,025,000. Two days later, the ceiling was raised to \$4 million.<sup>7</sup> Personnel were being ordered into Valdez from locations around the country. Transportation, lodging expenses, and per diem allowances quickly depleted the small reserves of funds that were available at Juneau, and it became necessary for Headquarters to revise the ceiling once again after only five days of response activity.<sup>8</sup>

As it became apparent that the response would become a major undertaking, the need for an experienced overseer of fiscal operations became apparent. Consideration was given to assignment of a junior officer on an intermediate basis, but instead, then-Captain David Ciancaglini,<sup>9</sup> pacific area chief of staff, detailed chief, finance division, Captain Ralph Anderson, pacific area maintenance and logistics command, for the assignment. Captain Anderson had participated in a Coast Guard oil spill finance contingency planning session only three months earlier (in Washington, D.C.). Thus, he was able to provide the most current insights regarding finances during spill operations.<sup>10</sup>

At U.S. Coast Guard Headquarters, Mr. Allen Thuring, (USCG Headquarters Office of Marine Safety, Security and Environmental Protection Marine Environmental Response Division or G-MER) pollution fund administrator, soon recognized that standard funding arrangements would not be sufficient to support the *Exxon Valdez* incident. Normal operating procedures envisioned that cleanup costs would be billed to the responsible party after response activities were completed. In the case of the *Exxon Valdez* spill, the pollution fund balance diminished within the first week to less than \$2 million.<sup>11</sup> The fund was clearly woefully inadequate for the task ahead. A plan was needed to provide continued solvency of the 311(k) fund, if ongoing participation by federal agencies was to be possible.

At least two of the options that were considered were quickly found to be impractical. First, the possibility of securing an emergency supplemental appropriation from Congress was weighed. That was considered to be impractical since the Coast Guard already had a supplemental appropriation request before the U.S. Congress. The introduction of an additional supplemental request, therefore, was judged as unlikely

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6. W. S. Hanable, "Military Support for Cleanup of the Exxon Valdez Oil Spill," 1 Jan. 1990, no. W1325, FOSC Exxon Valdez Archive, 12.

7. A. Thuring (NPFC), recalled being awakened at 4:00 A.M. (EST), on 26 March, with a request that the ceiling be raised to \$4 million. Though Polreps published during early dates show lesser figures, Thuring attributed that factor to a likely informational time gap.

8. USCG Pollution Report O 312354Z March 89 (PWS Polrep 16), sec. 3 (F).

9. Capt. Ciancaglini shortly afterwards attained the rank of Rear Admiral and served as 17th Coast Guard District commander. In September, 1989, he became Federal On Scene Coordinator for the *Exxon Valdez* spill.

10. Capt. R. Anderson, interview by Lt. Comdr. R. Gaunt, Anchorage, 26 Nov. 1991, no. F147, tape, FOSC Exxon Valdez Archive.

11. A. Thuring (NPFC), interview by Lt. Comdr. R. Gaunt, Anchorage, 3 Aug. 1992, no. F720, tape, FOSC Exxon Valdez Archive.

to be supported.<sup>12</sup> A second option was a temporary diversion of funds already within the Coast Guard budget for operational expenses. That proposal was considered by the commandant to be infeasible.<sup>13</sup> Were the response to be as costly as was now being predicted, other important Coast Guard functions would likely suffer severe funding shortfalls.<sup>14</sup>

Finally, Allen Thuring and Robert Skall (G-MER) proposed a “progress payment” arrangement, whereby Exxon would provide reimbursement to the 311(k) account as expenses were incurred and certified by the FOSC.<sup>15</sup> Exxon was contacted, and the plan was presented. An informal agreement was quickly reached, and the first billing, in the amount of \$4 million, was sent to Exxon on 5 April 1989.<sup>16</sup> Within twenty-four hours, the first reimbursement had already been made, the full amount having been wired to the Federal Reserve Bank in New York. A procedure permitting dependable and rapid recovery of federal agency costs had thus been instituted. This proved to be a very significant development in maintaining the federal agencies’ ability to stay with the response.

In spring 1989, the pollution fund took custody of \$15 million provided by Exxon for natural resource damage assessment studies. Those funds were not available for cleanup activities, however, despite their being held in 311(k) accounts. Instead, they were trustee funds that were routed to the pollution fund principally because there seemed to be no more appropriate place available.<sup>17</sup> Although the FOSC had no ability to access the \$15 million in question, its presence in the account served to open up a relationship between the Pollution Funds Center and the trustees. When the settlement phase of the response came, late in 1991, the Coast Guard thus was already familiar with those with whom it would now have to work.

Some functions, such as local purchase arrangements through the Coast Guard’s standard form agreement (SF-44) requisition form and basic purchase agreements (BPA), were overseen through 17th District Coast Guard offices in Juneau during the spring and summer of 1989. In the meantime, a procedure for recovery of federal costs through the pollution fund was established. The task was accomplished through daily forwarding of FOSC cost summaries to the pollution fund administrator at G-MER where they were recorded, classified, and sent to U.S. Coast Guard Headquarters Commandant Accounting Management (G-CAM). There, billings were prepared and sent to Exxon for payment. Exxon normally furnished prompt payment as invoices were received from U.S. Coast Guard Headquarters, though payments from the 311(k) fund could not be made until Exxon’s payments were actually in hand.<sup>18</sup> (Owing to the

12. Ibid.

13. The Coast Guard’s budget is set up on a fiscal year which begins on 1 October. When the *Exxon Valdez* grounding took place, nearly half of the fiscal year had already passed. Among the remaining operational funds in the 1989–90 budget, only a small portion was considered to be true discretionary. The Coast Guard could not have absorbed the added costs without substantially crippling operations elsewhere—an option which the commandant was not prepared to consider.

14. Vice Adm. C. T. Lusk, Jr., letter to Hon. U.S. Rep. W. J. Tauzin, 27 July 1989, no. C1266, FOSC Exxon Valdez Archive.

15. Thuring, interview, 3 Aug. 1992.

16. According to A. Thuring, the parties agreed that an informal agreement would be best for the circumstances. The informality was, therefore, by design and not due to anyone’s oversight or mishandling.

17. Thuring, interview, 3 Aug. 1992.

18. Ibid.



large amounts involved, the fund did not have the “float” to cover reimbursements while awaiting the transfer of large amounts.)

In 1990–91 and through part of 1992, Captain Anderson remained involved in the 311(k) certification process, though he returned to his normal duty assignment at Pacific Area Maintenance and Logistics Command. Captain Anderson’s continuing involvement helped to provide a stabilizing element in the fiscal picture. Although other FOSC personnel were subject to rotation, Captain Anderson served as a relatively permanent fixture.

#### THE FEDERALIZATION QUESTION

Though the 311(k) system was soon functioning, the cleanup itself was not progressing in a manner that pleased all parties. Spokesmen for the State of Alaska, including Governor Steve Cowper, continued during the first two weeks of the spill to call for federalization of the cleanup. In the state’s view, Exxon was not only failing to make adequate progress in the cleanup, but was incapable of ultimately completing the task. According to the governor, Exxon ought to have been relieved of responsibility, and the job assumed by the federal government.<sup>19</sup> The FOSC should direct, not monitor the cleanup, in the governor’s view.

Had such an arrangement been adopted, it might have had significant implications for the funding of operations. Would, for example, Exxon have been willing to provide the same level of fiscal undergirding if the federal government, and not the corporation, was in charge of operations?

It is possible that the state’s real objective in pressing for federalization of the spill was to encourage the tightening of Coast Guard control of spill operations. Before making the state’s request, Alaska Department of Environmental Conservation (ADEC) Commissioner Dennis Kelso met with Rear Admiral Nelson, informing him about the forthcoming request. Rear Admiral Nelson advised Kelso about the potential for funding problems under federalization. The state’s intent, according to Kelso, was to urge the Coast Guard to assume a clear and undisputed leadership role, while at the same time maintaining the option of using Exxon’s resources.<sup>20</sup>

Two communications from state authorities, both dated 5 April 1989, contain passages that suggest that the state may have been trying to strengthen the Coast Guard’s hand while maintaining Exxon responsibility for conducting the cleanup. Lynn J. Tomich Kent, state RRT representative, urged that the Coast Guard “assume from Exxon full responsibility, under 40 CFR, Part 300, for conducting the response.” Tomich Kent further acknowledged that ADEC “continues to rely on the full support and

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19. These positions were widely disseminated in the media during the first week of April 1989. Both Governor Cowper and ADEC Commissioner Kelso were interviewed on the KAKM-TV “Oilwatch” segment that was broadcast on 6 April 1989, and emphasized these views. (KAKM-TV is a local [Anchorage] public broadcast station.)

20. D. Kelso (ADEC), interview by Dr. T. Leschine (FOSC staff), Seattle, 5 Nov. 1992, no. F742, FOSC Exxon Valdez Archive.

cooperation of the Exxon team, however.”<sup>21</sup> Governor Cowper’s communication urged that “the Coast Guard immediately take over coordination of the *Exxon Valdez* oil spill under 40 CFR Part 300.”<sup>22</sup> Each letter was critical of Exxon’s efforts, but neither of them utilized the word “federalization.”

In early April, the House Subcommittee on Coast Guard and Navigation held hearings on the *Exxon Valdez* incident. Addressing the Subcommittee, Admiral Yost discussed possible federalization of the spill. The commandant told the committee that, while the Coast Guard had a small fund (311[k]) with a balance of three to four million dollars, Exxon was a “corporate giant who has been a good corporate citizen in their response so far, willing to open their checkbook, [and] put no limits on it.” Federalization could permit Exxon’s withdrawal from the cleanup, which would “force the government to assume cleanup costs.”<sup>23</sup> He added, “A corporate entity does not have the federal procurement rules, the regulations, all of the problems that you have in...taking bids, being sure that everybody has a shot at it.” Permitting Exxon to continue in the role of monitored cleanup manager provided a more flexible and timely response arrangement, in Admiral Yost’s view: “You [we] cannot just go out and...write checks, as Exxon can.”<sup>24</sup>

#### ACCOUNTING FOR FOSC APPROVED EXPENDITURES

An accounting office was established in Valdez where Captain Anderson’s staff evaluated reimbursement requests from federal agencies and made recommendations to the FOSC concerning the validity of expenditures. (Actual certification of reimbursement requests is a function of the FOSC.) When approved, they were next forwarded to Coast Guard Headquarters (G-MER).<sup>25</sup> There, invoices were prepared and forwarded to Exxon for reimbursement. When payments were received from Exxon, disbursement to agencies was made through MLCAPAC, located in Alameda, California.<sup>26</sup> The FOSC’s budget office was initially staffed by two to three individuals, who gathered chargeable costs on a daily basis, recorded them in FOSC records, prepared a daily summary, and dispatched (by fax) a copy to Coast Guard Headquarters (G-MER). In Washington, reports from the FOSC were used to monitor response costs, assist in pollution fund budget management, and to prepare invoices that were to be sent to Exxon. At the 1989 peak of activity, seven to eight personnel were assigned to the task of processing FOSC accounting data.<sup>27</sup> Outside the offices of the FOSC, *Exxon Valdez*

21. L. J. Tomich Kent (Alaska RRT), letter to Comdr. D. Waldron, 5 Apr. 1989, no. C613, notes, FOSC Exxon Valdez Archive.

22. Governor S. Cowper (state of Alaska), letter to Rear Admiral E. Nelson, 5 April 1989, no. C430, FOSC Exxon Valdez Archive. Although Rear Admiral Nelson had not yet assumed the role of FOSC on the date the letter was written, it was addressed to him in his capacity as commander, 17th Coast Guard District.

23. States News and Associated Press, “Bush Orders U.S. Military to Oil Cleanup,” *The Anchorage Times*, 7 Apr. 1989, sec. A.

24. Testimony of Adm. P. Yost (commandant), at hearings conducted by House Subcommittee on Coast Guard and Navigation, Washington, D.C., 6 Apr. 1989, 22–23, no. C1660, FOSC Exxon Valdez Archive.

25. Billing is actually a G-CAM function, but FOSC staff forwarded correspondence to G-MEP for an intermediate processing stage. G-MEP then passed its materials to G-CAM for billing to Exxon.

26. Capt. R. Anderson, interview by Lt. Comdr. R. Gaunt, Anchorage, 25 June 1992, no. F729, FOSC Exxon Valdez Archive. Very few such requests from other federal agencies were processed in this manner in 1989, according to Capt. Anderson. Agencies apparently needed time to establish internal billing procedures, thus many of the requests were not received until a much later date.

27. USCG, “FOSC Exxon Valdez Personnel Report,” 12 June 1991, no. F683, FOSC Exxon Valdez Archive.

accounting required the primary attention of two to three staff members at MLCPAC as well as one each at U.S. Coast Guard Headquarters (G-MER and G-CAM).<sup>28</sup>

Initially, financial record keepers employed handwritten documentation, using forms furnished by the Pacific Strike Team. The Coast Guard had recently contracted for the development of an oil spill cost data system that was in early developmental stages, but not yet ready to meet the needs of the *Exxon Valdez* response. In mid-April, an interim system for daily accounting was set up on a Coast Guard standard terminal using MULTIPLAN™, a spreadsheet application.<sup>29</sup>

Flaws inherent in the system being employed led to accounting difficulties. Exxon was billed for services of Coast Guard personnel on the basis of hourly wage rates that varied according to rank.<sup>30</sup> The difficulty was that Exxon was billed only for the hours during which response related work was actually performed. This meant that when personnel traveled to and from the response-area and home districts (travel days), Exxon was not billed for the time. Such other nonresponse duty days as in-processing or out-processing, days at the dispensary, "days off," or days spent in transition from one Incident Command Post (ICP) to another, also did not result in a billing to Exxon. While it might be argued that Exxon should only have been expected to pay for services actually rendered, it was also true that the personnel had to be paid nonetheless. The Coast Guard thus had to absorb the expense of paying a nonreimbursed portion of salary for nearly all Coast Guard personnel who served in the response. There is now no effective way to determine the dollar amount that was involved.<sup>31</sup>

Paradoxically, the result may not have been a net loss for the Coast Guard. Although personnel were paid on the basis of standard military pay schedules, they normally worked long hours—all of which were reimbursed by Exxon. The Coast Guard, in effect, collected overtime wage reimbursement, which it was not required to pass on to its employees on an overtime scale. When an ICP supervisor worked sixteen hours, for example, Exxon was billed for sixteen hours of time. Those who performed seventy to eighty hour workweeks thus earned, for the Coast Guard, the equivalent of 1-1/2 to 2 standard weekly Coast Guard salaries. Whether or not the "loss" from nonbilled workdays was balanced by "overtime" paid by Exxon cannot be determined.<sup>32</sup>

The Regional Response Team (RRT), through its Coast Guard representative, soon informed the federal agencies that they would need to keep accurate records of chargeable expenditures. Furthermore, they were required to seek prior approval for reimbursable expenses using established procedures.<sup>33</sup> Failure to meet this

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28. Thuring, interview, 3 Aug. 1992.

29. Anderson, interview, 26 Nov. 1991.

30. The Coast Guard had developed a standard hourly rate to be charged for oil spill response. The rates are contained in enclosure 1 of Commandant Instruction no. 7310.1.

31. It was apparently assumed, during 1989, that the accounting system would somehow permit later cost recovery. It was expected that it would be possible to adjust billings based on data retrieved from records, when things calmed down. It was discovered, however, that the lack of accumulated documentation prevented construction of valid billings (Thuring, interview, 3 Aug. 1992).

32. Thuring, interview, 3 Aug. 1992.

33. Comdr. D. D. Rome, letters to J. Robinson (NOAA), F. Cunningham (FAA), and A. Ewing (EPA), 12 May 1989, no. C532, FOSC Exxon Valdez Archive. These letters outline the procedures and documentation standards contained in 33 U.S.C. 1321.

requirement jeopardized some claims. In 1989 the Department of Health and Human Services was not reimbursed for some \$300,000.<sup>34</sup> Generally the plan operated in a satisfactory manner. Several of the federal agencies had previous experience in dealing with Coast Guard FOSCs and understood the fiscal protocols. Those who were unfamiliar with the process generally tried to work cooperatively within the system, and to develop internal accounting systems compatible with FOSC needs. The U.S. Forest Service (FS) was a notable exception, having negotiated a direct-to-Exxon billing arrangement that may have been motivated by the FS's need for more prompt reimbursement of expenses.<sup>35</sup> Later, the National Oceanic and Atmospheric Administration (NOAA) also negotiated a direct-billing arrangement for the subsistence studies that were conducted in 1990.<sup>36</sup> Apart from those special arrangements, federal agencies functioned within the normal FOSC 311(k) procedures.

The precipitate and unexpected nature of the *Exxon Valdez* grounding meant there was little time to institute normal budgetary planning, review, and approval procedures. Federal agencies of necessity made cost-incurring commitments as they arose, planning to seek reimbursement after the fact. Guidelines were provided to other agencies, by the FOSC, whose job it was to manage the encumbrance of funds to cover response costs.<sup>37</sup> Time, a commodity that was more readily available during the winter months and thereafter, permitted the establishment of better planned budgetary arrangements for the later phases of the response. Beginning in 1990, agencies were first encouraged, then required, to submit proposed budgets to the FOSC for prior approval, thus establishing the more conventional budgetary process that remained in place thereafter.

#### OTHER 311(K) ISSUES

The RRT provided guidance to the FOSC on which expenditures would and would not be eligible for reimbursement. Detailed itemization was required, for example. Expenditures needed to be directly related to the cleanup, justifiable in terms of necessity, and appropriate to the function of the agency.<sup>38</sup> Applying those standards was not always easy, however.

For example, the FOSC was thrust into the midst of a \$5.5 million dispute between the Army Corps of Engineers (COE) and Exxon over charges for the use of COE dredging equipment brought to the response area from the "lower 48." The posture taken by Exxon was that it had contracted only for cleanup services, and would only pay for oil cleanup work. The COE, however, submitted billings that included charges for public affairs, a command operations center, and assorted laboratory operations. Additionally, COE wanted Exxon to pay costs incurred when replacement dredges took over the work on the Columbia River, which was being done by the dredges sent to Alaska. The FOSC

34. U.S. General Accounting Office, "Federal Costs Resulting From the Exxon Valdez Oil Spill" (furnished to Congress by request, report no. GAO/RCED-90-91FS, 26 Jan. 1990), no. W1039, FOSC Exxon Valdez Archive, 26.

35. *Ibid.*, 21. The agreement, signed on 7 April 1989 paid for cleanup costs on National Forest lands.

36. Thuring, interview, 3 Aug. 1992.

37. Rome, letters, 12 May 1989. These letters, sent to various federal agencies, provide examples. It could be argued that these "side deals" were still in effect expenditures of 311(k) funds. If so, the Anti-Deficiency Act (31 U.S.C. 1341) would not apply. Nevertheless, the FOSC's ability to control costs in a cleanup is limited by such arrangements.

38. Rome, letters, 12 May 1989.

took the position that the Coast Guard could support only those charges that had been specifically authorized and requested.<sup>39</sup> The COE and Exxon could not reach an agreement. The matter languished until late in the life of the response. The Coast Guard treated it as an unreimbursed response cost. In December 1991, \$1.4 million was paid to the COE as a part of the settlement agreement. The balance, \$4.1 million, was paid as part of the 1992 payment to the trustees.

Other problems arose when agencies elected to provide services that were judged later by the FOSC to have been unnecessary or which had not been requested by the FOSC. As a result, the FOSC found that it was compelled to deny a rather substantial number of 311(k) reimbursement requests. Costs associated with organizing volunteers, conducting surveys, and providing scientific services (weather forecasting, for example), or for services that would otherwise have been normal functions of an agency, were among those which were subject to denial.<sup>40</sup> Charitably described, news that the FOSC had refused a reimbursement request was often not well received by agencies and their spokespersons. It appeared to the FOSC that many simply had their "hand out."

One of the thorniest financial issues was the question of "full reimbursement" for U.S. Department of Defense (DOD) participants in the response. The U.S. Department of Transportation (DOT), in DOD's view, was not observing the mandates of the Economy Act (31 U.S.C. 1535, et seq.), that "the furnishing agency (is) to be reimbursed for the 'actual cost' of providing the goods or services." When Coast Guard authorities informed the DOD that reimbursement would cover incremental, and not actual, costs of participation, DOD demanded "full payment immediately." Declaring that "at no time were we [DOD] told that your Department [DOT] intended to reimburse DOD for less than DOD's full costs of the cleanup expenses." The communication went on to accuse the DOT of "obtaining reimbursement from Exxon" for the expenses involved, then diverting the proceeds to the pollution fund (for DOT benefit) rather than forwarding them to the defense agencies that had incurred the expenses.<sup>41</sup>

The Coast Guard based its denial of actual cost reimbursement on provisions contained in 33 CFR, 153.407. Federal agency reimbursement may be authorized by the Coast Guard for removal activities "that are not ordinarily funded by an agency's regular appropriations."<sup>42</sup> General Accounting Office (GAO) accountants visited the FOSC in response to a request from the House Armed Services Committee, and produced a report that discussed the Coast Guard's 311(k) funding procedures. The report was silent on the applicability of the Economy Act.<sup>43</sup> The GAO's nonintervention on

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39. FOSC, letter to commandant (G-MER), 28 Sept. 1989, no. C2462, FOSC Exxon Valdez Archive. The FOSC reported that the U.S. Department of Defense (DOD) request for reimbursement of dredging expenses contained "many questionable/undocumented items unrelated to the dredges themselves." The matter was returned to the DOD.

40. P. D. Gates (DOI), letter to Rear Adm. D. Ciancaglini, 12 July 1991, no. F406, FOSC Exxon Valdez Archive. The letter illustrates FOSC refusal to reimburse costs judged to be inappropriate. In his communication, Mr. Gates suggests that his superiors planned to "elevate this matter to Washington, D.C., if a satisfactory solution cannot be achieved locally."

41. A. Tucker (DOD), letter to Rear Adm. J. D. Sipes, 20 Mar. 1990, no. W1953, FOSC Exxon Valdez Archive.

42. 33 CFR 153.407 (a)(3).

43. U.S. General Accounting Office, "Federal Costs Resulting From the Exxon Valdez Oil Spill," 19-20.

DOD's behalf was interpreted by Coast Guard personnel as evidence that "full reimbursement" was not required.

Throughout the 1989 summer period, Coast Guard spill-related costs averaged in excess of \$130,000 per day with considerable day-to-day variation.<sup>44</sup> Maintaining an accounting system to manage even the Coast Guard portion of expenditures and transactions proved to be a substantial undertaking. With the addition of monitoring and certification of other government agencies, the task of fiscal management became formidable. Despite a busy schedule and occasional disagreements, the FOSC managed to certify a total of \$94.6 million in costs during the period that ended on 30 September 1989.<sup>45</sup> The development of a working budgetary system, Exxon's consent to reimburse on a progress payment basis, and the work done by Coast Guard personnel, combined to keep the pollution fund solvent throughout the period. Not only were uninterrupted operations permitted in the response, but the pollution fund was also able to expend an additional eight million dollars on other spills that occurred in other ports and areas during the same period.<sup>46</sup>

#### COST RECOVERY AFTER SEPTEMBER 1989

In the comparatively less hurried atmosphere of the winter 1989–90 period, Coast Guard fiscal managers were able to make an in-depth review of response costs from the previous months. The findings permitted the recovery of an additional four million dollars, the result of a more detailed study of Coast Guard aircraft and vessel operating costs than had previously been available.<sup>47</sup>

When federal agencies began to submit budgets for the FOSC's prior approval in 1990, the budgetary process was stabilized. The opportunity to discuss expenditures before, rather than after they were made, clarified and simplified reimbursement arrangements. Although agencies were expected to live within the means provided by their approved budgets, provision was made for additions (in the form of budgetary amendments) if unanticipated needs arose. It was required that amendments be submitted to the FOSC (prior to committing funds) for approval.<sup>48</sup> As the system became established and understood by all parties, it served to reduce the occurrence of disputes caused by unauthorized spending.

When contrasted with the \$110 million that was spent by federal agencies during 1989, the costs of subsequent annual operations were substantially less (table 23.2). But they were nonetheless significant when compared with most other spill responses.

Federal agencies actually "spent" more than the accounts show, as many agency activities were neither budgeted nor paid for in actuality. Instead, when equipment or a

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44. The actual figure was \$133,931 based upon a 181 day time span and Coast Guard expenditures of \$24,241,592 (FOSC, payment transmittal to M. Giblin (Exxon), 29 Sept. 1989, no. C1228, FOSC Exxon Valdez Archive).

45. Capt. R. Anderson, internal memorandum to file (summary of Coast Guard billings to Exxon, and MLCAPAC, 22 Oct. 1991), no. F728, FOSC Exxon Valdez Archive.

46. Thuring, interview, 3 Aug. 1992.

47. Pacific Area Strike Team member SK1 M. Bella compiled a detailed list of vessel and aircraft activity based upon vessel log books during the winter 1989–90 months.

48. Thuring, interview, 3 Aug. 1992.

particular service was needed, the procedure was simply to contact Exxon directly. If, for example, the services of a helicopter were required, a call was made to Exxon, arrangements were made and representatives of that agency met the helicopter at the airport. The 311(k) fund was not involved. Thus, the direct expenditures of federal agencies (including the Coast Guard) do not reflect a complete picture of costs incurred during the response.

Although the passage of the Oil Pollution Act of 1990 changed the method of response funding, the FOSC was permitted to "grandfather" the use of 311(k) funding arrangements.<sup>49</sup> *Exxon Valdez* was, therefore, not only the largest project ever engaged by the pollution fund, but also the Coast Guard's final 311(k) response.

TABLE 23.2

Distribution of Reported Federal Costs in the 1990 and 1991 Exxon Valdez Response  
Grouped According to Departments.

Federal Department	Amount Expended (millions)	Percentage of Total (%)
1990		
Defense	-0-	-0-
Transportation	\$17.8	82.9
Interior	\$1.9	8.8
Commerce	\$1.8	8.2
Other Departments	-0-	-0-
<b>1990 Total</b>	<b>\$21.5</b>	<b>100.0</b>
1991		
Defense	-0-	-0-
Transportation	\$1.5	44.1
Interior	\$0.6	18.0
Commerce	\$1.3	37.8
Other Departments	-0-	-0-
<b>1991 Total</b>	<b>\$3.4</b>	<b>100.0</b>

Source: CWO L. Porter (FOSC accounting officer), "Total Costs for T/V Exxon Valdez Oil Spill For Periods Indicated" (FOSC internal document, undated), no. F784, FOSC Exxon Valdez Archive.

Fiscal management became less complex after 1989. Temporarily assigned personnel tended to spend longer periods of time attached to the FOSC, thus reducing the "revolving door" effect on the payroll system. Although incident command posts remained in Seward, Kodiak, and Homer for most of the 1990 summer season, fiscal managers did not face logistical complexities similar to those encountered in 1989. Fiscal, logistical, and supply operations were managed by a five-person cadre in Anchorage, while one chief storekeeper remained in Juneau for FOSC payroll management.<sup>50</sup> The now Anchorage-centered operations had the added benefit of

49. The Oil Pollution Act of 1990 (33 U.S.C., ch. 40) specifies that the new legislation was "applicable to incidents occurring after Aug. 18, 1990."

50. USCG, "FOSC Anchorage Billet List," 13 Mar. 1990, no. W548, FOSC Exxon Valdez Archive.

being near the major military finance center at Elmendorf AFB, an arrangement that proved to be valuable throughout the remaining life of the response.

As 1991 began, attention was directed toward “the settlement,” the terms and legal conditions through which Exxon would come to a final agreement with the state of Alaska and the federal government. When an initial settlement agreement was signed by the parties in March of 1991, the terms specified that remaining cleanup costs would be charged to settlement funds, rather than being recovered through the 311(k) process.

#### TRANSITION TO FUNDING UNDER THE SETTLEMENT AGREEMENT

On 12 March 1991, the federal and state governments and Exxon reached an out-of-court settlement for damages arising from the spill, subject to approval by the federal district court and the Alaska legislature. This agreement envisioned a greatly expanded financial management role for the FOSC. Prior to the settlement agreement, Exxon, as the responsible party, had controlled its own expenses. The settlement agreement, however, established Coast Guard oversight. Exxon agreed to continue the cleanup “as directed by and in accordance with the directions of the Federal On-Scene Coordinator [FOSC], subject to prior approval by the FOSC of the costs of work directed by the FOSC.”<sup>51</sup>

This expanded fiscal role was a subject of an FOSC-sponsored meeting in April, 1991. The meeting was attended by legal and fiscal staff from Coast Guard Headquarters, the U.S. Department of Transportation, the National Pollution Funds Center, the 17th Coast Guard District, Juneau, Alaska, and FOSC staff. Agreement was reached on a number of fiscal procedures subsequently adopted by the FOSC:<sup>52</sup>

Establishing control and accounting procedures that provided for Coast Guard review of Exxon expenditures and pre-approval of cleanup work,<sup>53</sup>

Establishing financial review and audit procedures, and

Determining the mechanism for reimbursement of FOSC and other government agencies’ response costs.

The settlement agreement, although signed by all parties, required the approval of both the Alaska legislature and the federal district court judge for the *Exxon Valdez* case. In April, Judge Russel Holland rejected the criminal plea bargain and the legislature rejected the entire agreement. Accordingly, the settlement was terminated. Paragraph 38 of the agreement, however, provided that the provisions of paragraphs 11 and 12, relating to cleanup, shall continue in effect notwithstanding any termination. In effect, the fiscal policies developed by the FOSC to implement the original settlement agreement continued despite its termination. The termination raised enough questions and concerns for the FOSC to convene another meeting on 14 and 15 May 1991.

51. Agreement and consent decree, 12 Mar. 1991, between the United States of America, the state of Alaska and Exxon Corp.

52. USCG (briefing book prepared for visiting VIPs, 10–11 Apr. 1991), no. F150, FOSC Exxon Valdez Archive.

53. USCG (briefing book prepared for visiting VIPs, 29–30 Oct. 1991), sec. 2, no. F153, FOSC Exxon Valdez Archive.



The second meeting dealt with such questions as: (a) whether the provisions of paragraph 38 were in fact viable;<sup>54</sup> (b) the FOSC's role in determining the direction of the cleanup and the approval of costs if they were viable; (c) the Coast Guard's policies with respect to auditing costs, including Exxon's; and (d) the implications of paragraph 12, which entitled Exxon, if the agreement was terminated, "to set off against any liability it may have to either government arising from the oil spill the amount of any expenditures made by Exxon for cleanup work directed by the FOSC."<sup>55</sup>

The meeting resulted in a series of recommendations to the FOSC.<sup>56</sup> The recommendations were to maintain the status quo with the exception of the position taken on auditing Exxon. Since there was no formal agreement, there was not the same need to audit Exxon. However, it was recognized that another agreement could be reached that would require some sort of audit. The FOSC concurred with the consensus of those attending the meeting and adopted the recommendations. Accordingly, the FOSC staff put in place a number of cost monitoring systems that could serve as a basis for independently monitoring Exxon expenses at a later date.

In order to facilitate the FOSC's expanded financial role, a "settlement" branch was established. The branch was charged with: (a) tracking all incoming cleanup work requests (CWR) from Exxon and proposals from other government agencies (OGA); (b) in conjunction with operations, reviewing the operational needs and the fiscal implications of the CWR or the OGA's proposal; and (c) generating a decision document for the FOSC. If the proposal was approved, the conditions of the approval were to be forwarded to either the OGA or Exxon along with requirements for tracking costs, progress payments, etc. A record keeping system was also to be established.

The overall financial management plan established by the FOSC started with the review of the work to be accomplished and ended with records necessary to support an audit of the costs that were approved. The plan was executed and proved both flexible and capable of producing real fiscal control for the overall response effort.

On 7 October 1991, U.S. District Court Judge Holland accepted a second settlement agreement among the state of Alaska, the federal government, and Exxon.<sup>57</sup> Under the newly adopted settlement agreement, the FOSC's role in directing the cleanup effort and preapproving Exxon's cleanup expenditures was retained. As part of the agreement, Exxon was obliged to make a payment on 1 December 1992 of \$150 million, minus their response expenditures as approved by either the FOSC or the state OSC. To provide an accurate accounting of the expenditures preapproved by the FOSC, it was determined by the FOSC, in conjunction with the commandant, that a financial review of Exxon would be conducted before the 1 December 1992 payment was made.<sup>58</sup>

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54. There was discussion with attorneys in the Coast Guard (G-LCL or U.S. Coast Guard Headquarters Commandant Claims and Litigation) and the U.S. Department of Transportation that if the settlement agreement was terminated then all provisions should be terminated; in essence, a part could not survive the death of the whole.

55. Agreement and consent decree, 12 Mar. 1991.

56. USCG (briefing book prepared for visiting VIPs, 14 May 1991), no. F152, FOSC Exxon Valdez Archive.

57. *United States of America v. Exxon Corp.*, case no. A90-015-1CR and A90-015-2CR. Included in a briefing book prepared for visiting VIPs, 29-30 Oct. 1991, F153, FOSC Exxon Valdez Archive.

58. Rear Adm. A. Henn, letter to FOSC, 23 Mar. 1992, no. F353, FOSC Exxon Valdez Archive.

The financial review verified that actual expenses were consistent with the preapproved estimates and both the state of Alaska and the federal government agreed to use the Coast Guard's figures as the basis for determining what Exxon should pay.

#### PROPERTY ACQUISITION AND MANAGEMENT

It was necessary to set up a substantial property management system in order to support Coast Guard response operations. Office needs included basic furnishings, computers, communication equipment, and other items, including consumable supplies. In the field, specialized clothing and footwear, small boats, motor vehicles, appliances, household furnishings, and personal safety equipment were among the many articles required. The procedures to secure the needed gear progressed through at least three stages during the response.

Throughout most of summer 1989, a rather loose and informal procurement arrangement existed between the Coast Guard and Exxon. When a particular item or service was desired, Exxon was contacted and asked if they could directly supply the need, perhaps, from existing inventories, or through an already-contracted vendor. If Exxon couldn't help, then the Coast Guard made purchases through 311(k), and recovered the costs from Exxon. The latter arrangement proved to be the most common as Exxon was often concentrating on needs of its own. During most of the 1989 cleanup season, emergency Coast Guard purchase procedures permitted timely acquisition of equipment and supplies. Local procurement without a need for requisitions and multi-step approvals was thus possible.

When the pace of events in the field began to slow in late summer of 1989, a format was instituted whereby Exxon provided equipment for Coast Guard use on a "loaner" basis. Most of the furnishings that were used to set up the FOSC offices in Anchorage, for example, came directly from Exxon inventories. Coast Guard direct equipment purchases became far less common, not only because the level of cleanup activity had eased, but also because Exxon encouraged the use of items from its substantial inventory.<sup>59</sup>

In the spring of 1990, it was discovered that the Coast Guard FOSC lacked an accurate property list. The previous year's activities had left behind an assortment of partial lists and many purchase records, but a consolidated and comprehensive document had not yet been developed.<sup>60</sup> That project, therefore, became a priority beginning in spring 1990. The availability of dependable property inventories was not only necessary for management purposes, but was also an imperative when demobilization finally took place.

The next evolution came during the 1990-91 winter months. More of the Coast Guard's operational needs could be supplied, it was felt, and the whole process could be simplified, if Exxon would simply furnish those items and services on an

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59. Porter, interview, 26 Nov. 1991.

60. *Ibid.*

“as needed” basis. Once this plan was activated, the Coast Guard was no longer required to enter into, for example, rental agreements for housing or lease contracts for vehicles, since those needs were provided by Exxon. The system reduced the need for time-consuming Coast Guard administration of the bidding process, since it was Exxon that was entering into the necessary lease, purchase, or rental agreements. Furthermore, as needs arose, it was possible to meet them on a more timely basis, since Exxon, and not the Coast Guard, was doing the procuring. This came to be known as the “shared support” plan. It was welcomed by FOSC finance personnel as it served to eliminate delays and complexities and permit attention to be focused on other matters.<sup>61</sup>

The concept of “shared support” was first introduced by Lieutenant Commander Dave Mogan, the FOSC’s 1990 administration and planning officer. Exxon, according to Mogan, was willing to assume contracting responsibility for both lodging and motor vehicles to be used by the FOSC staff during the 1990 response. Shared support was initially proposed during the spring, as the year’s format was being established. The idea was rejected, however, by FOSC chief of staff, Captain David Zawadzki. Captain Zawadzki believed that such an arrangement might create “the wrong impression” about the relationship between Exxon and the Coast Guard.<sup>62</sup> When the idea was proposed once again, in the late winter of 1991, the atmosphere was much less politically charged, and conditions permitted entering into the shared support arrangement.<sup>63</sup> Shared support subsequently proved to be a mutually beneficial, and more cost-effective means, of providing the goods and services needed for FOSC operations.

The items furnished by Exxon for Coast Guard operations remained the property of the corporation. When no longer needed, they were returned to the company. On various occasions, usually during a down-sizing of the response, or as the onset of winter months slowed activities, substantial amounts of material were returned. Exxon held periodic property disposal auctions to liquidate items that were no longer needed. Those sales generated substantial community interest.<sup>64</sup>

The (G-MER) Debriefing Conference participants considered what might have happened had the FOSC had to rely upon conventional Coast Guard procurement processes (for example, in the event of federalization). Flexibility, such as might be provided by a presidential executive order waiving applicability of federal government property procurement regulations was seen as a desirable option for future large-scale responses.<sup>65</sup>

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61. Ibid.

62. Lt. Comdr. D. Mogan, conversation with BM1 R. Travis, Anchorage, 30 Oct. 1991, no. F132, notes, FOSC Exxon Valdez Archive.

63. The idea surfaced, again, at a meeting of Coast Guard and Exxon finance personnel that was held in January of 1991. It was implemented shortly thereafter.

64. At the largest of these, held in Anchorage on 9–11 Oct. 1990, a contract auctioneering firm disposed of 4,844 items. Hundreds of bidders and onlookers were on hand.

65. USCG (G-MER), Tank Ship Exxon Valdez: Oil Spill Management Analysis Debrief, in “G-MER Conference Report” (summary of the conference held in Alexandria, Virginia, 4–6 Dec. 1989), no. W292, FOSC Exxon Valdez Archive. Major regulations governing military procurement are found in 41 CFR 423.251–260.

## 17TH COAST GUARD DISTRICT ASSISTANCE

The 17th Coast Guard District, in Juneau, assumed many of the financial tasks created by FOSC needs, including serving as disbursing agent for the payment of bills. Supplemental assistance was provided to the 17th Coast Guard District finance personnel by two reserve storekeepers who administered the payroll for reservists assigned to the spill. The often short duration and high turnover rate for reservists made it difficult to maintain stability in the reserve pay system, which was distinct from the active-duty pay system. The assistance of reservists in administering the reserve pay system proved necessary.<sup>66</sup>

## THE PER DIEM PAYMENT SYSTEM

The Coast Guard either did not have messing facilities where temporarily assigned persons served, or (as in Valdez and Kodiak) the existing small facilities could not accommodate the numbers of personnel present.<sup>67</sup> Temporarily assigned persons were thus often placed on a daily allowance (per diem). Assuring that personnel had advance per diem funds was another area of responsibility for accounting personnel that was subject to some ambiguity.

The preferred arrangement was that the sending districts would provide per diem advances.<sup>68</sup> This was not always done, however. Often orders were arranged with very short notice, and sending districts judged it best to dispatch the person to Alaska with per diem to be arranged there, rather than delaying departure. In some cases, personnel were ordered from locations far from a center where per diem advances could be provided. According to Captain Anderson, clear instructions were not provided by Headquarters to sending authorities during the spill's earliest days. When new assignees arrived, who had not obtained advance payments, they had to be sent to 21st Comptroller Squadron at Elmendorf AFB (in Anchorage), where the necessary funds were provided.<sup>69</sup>

Persons working under per diem arrangements occasionally needed access to additional funds. At Valdez, a provision was made to secure additional per diem advances (up to \$200 per week) through an "imprest fund," which had a base of \$10,000, and was replenished weekly. At Kodiak, supplemental per diem funds were obtainable from the local Coast Guard Support Center, but those in Seward and Homer had to journey to Anchorage, where the 21st Comptroller Squadron was located.<sup>70</sup>

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66. SKC A. Palileo, notes on payroll and finance, 27 Dec. 1991, no. F168, FOSC Exxon Valdez Archive.

67. The per diem matter was applicable, principally, to those who worked in support activities within Valdez, Kodiak, Homer, Seward, and Anchorage. Persons who stayed aboard berthing vessels were provided meals within the field.

68. On the other hand, SKC A. Palileo reported that the unanticipated receipt of large sums of money sometimes resulted in bad financial decisions. In the worst case reported, a younger enlisted member used nearly all of his per diem advance (prior to leaving for Alaska) for the purchase of a truck!

69. The 21st Comptroller Squadron and its successor, the Third Wing Comptroller Squadron, provided valuable assistance to the FOSC throughout the life of the response. Capt. Anderson believed that support to have been particularly commendable. The practice of using Elmendorf as a source of per diem funds began very early in the Coast Guard buildup of forces, and it appears to have required no special arrangements since the 21st comptrollers were a major finance operation.

70. Anderson, interview, 25 June 1992.

## LOCALLY PURCHASED SUPPLIES AND SERVICES

The sudden presence of large scale operations in Alaskan communities necessitated establishing arrangements with local businesses for such commodities as rental vehicles, fuel, lodging, hardware, and for such services as printing. Most vendors were quite willing to open accounts for the Coast Guard, but when it became apparent that payment would be slow, business relationships often became strained. Many vendors were small businesses, and their owners complained that cash flow problems (caused by the Coast Guard's slow payment procedures) were creating substantial hardships. Coast Guard personnel who had day-to-day dealings with such enterprises were sometimes faced with the task of trying to assure them that payments would indeed be forthcoming, while at the same time seeking additional credit extensions.<sup>71</sup>

A major problem in the 1989 vendor reimbursement process was the need to employ conventional purchasing procedures. The Coast Guard uses a standard form agreement (SF-44) for single transactions, and a blanket purchase agreement (BPA) when the objective is to set up an ongoing account. A filling station where government vehicle operators are able to "sign for" fuel is an example of the latter arrangement. A problem with each of these procedures is that copies of billings need to be cycled through the 17th Coast Guard District accounting office in Juneau, prior to being forwarded to the disbursing authorities in Alameda, California. This intermediate step in the billing/reimbursement process could have been avoided had a contractual agreement been entered into allowing the vendor to deal directly with the Coast Guard's disbursing agency.

The limited use made of such contracting arrangements may have been due to a shortage of personnel qualified to serve as Coast Guard contracting officers. "Much of the problem occurred since we did not have contracting officers to assign," according to one source. "Captain Anderson knew that there was a need, but he simply didn't have anyone to spare."<sup>72</sup> A designation as a Coast Guard contracting officer is normally attained only after substantial training and development. A reservist (even with substantial business experience) would not have qualified as a contracting officer for the *Exxon Valdez* oil spill. A shortage of qualified personnel in this area may have contributed to the problem of maintaining good relationships with vendors. Events in 1989 suggest that a more responsive system for vendor contracting and reimbursement under crisis conditions is desirable.

## SUMMARY

The central theme throughout the financial story of the response was Exxon's commitment pay for the cost of the cleanup. This commitment was evident in Exxon's willingness to enter into a novel arrangement to reimburse the 311(k) fund as expenses were incurred. The more common practice is paying after the cleanup and litigation of

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71. The Village Inn, a lodging facility in Valdez, is an example. Two years following the spill, the Coast Guard still owed \$24,000 for 1989 room rentals. There were others. Often the problem was a lack of understanding about how to bill the government for goods or services rendered.

72. Thuring, interview, 3 Aug. 1992.

costs are complete. Had Exxon, as the responsible party, acted differently in financing the cost of the cleanup the conduct and the outcome of the cleanup would have been substantially different.

The Coast Guard at the time of the spill lacked the financial resources and contracting capability to have independently executed the cleanup. The shortcomings in the finance and accounting practices experienced by the Coast Guard were all remedied over time and the practices of the FOSC's finance and supply department have provided the National Pollution Fund Center a model for future oil spills. However, the larger question of the Coast Guard's ability to finance and manage the fiscal realities of another *Exxon Valdez* oil spill still remains.



## CHAPTER 24. INFORMATION MANAGEMENT

### OVERVIEW

There was an unprecedented need for information during the *Exxon Valdez* oil spill response. Spill managers needed to know where oil was, how rapidly it was spreading, what damage was being done, what resources were available for the response, and how much effort the cleanup would take. Other organizations needed specialized information to support the cleanup and/or to assist in decision making. These included finance and logistics planners, legal authorities, archivists, and others. Although needs differed, the basic process was common; gather information, process it, then maintain it as a record of activity. The first portion of this chapter describes the operations information systems that supported the Federal On Scene Coordinator (FOSC). The second portion of the chapter describes the process of organizing and archiving FOSC records and documents. The last portion of the chapter discusses information management and the evolution of the data support systems that served FOSC operations through their fifty-one month life span.

### BACKGROUND

Information is a foundation upon which decisions are made, actions are taken, and predictions are made. The availability of high quality information can significantly affect the range of options available for decision makers. Information management during a spill response requires data tracking, synthesis and presentation, and effective communications. With appropriate media and hardware in place (e.g., computer mapping, paper reports, fax, and modem communications), information becomes a key component of response operations.

The National Contingency Plan (NCP) divides spill responses into four stages: (a) discovery or notification; (b) preliminary assessment and initiation of action; (c) containment, countermeasures, cleanup, and disposal; and (d) documentation and cost recovery.<sup>1</sup> Each phase has unique information requirements. In an emergency response, the information available initially is usually limited in both quality and quantity. Decisions made then can nevertheless have a profound influence on the direction of the response.

Typically, there are five stages of information processing during a response, starting with *identification* of information, both what is needed and what is available. Next is *capture* (or *acquisition*) of information. *Integration* of information into a usable format is the next stage, involving shaping information into easily communicated forms.

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1. 40 CFR, 300.51, 300.52, 300.53, and 300.54.



The fourth stage involves *presentation* and *distribution* of information to the intended audience. Documentation, or *archival*, is the fifth and final stage.<sup>2</sup>

After the grounding of the *Exxon Valdez*, spill managers needed a variety of information. Information was required on damage sustained, the amount and type of oil released, and for trajectory prediction (such as wind direction and speed, tidal cycles, and currents). In order to mobilize resources, secure the vessel, and offload the remaining oil, rapid reaction and access to crucial information was imperative. Gathering, collating, and distributing data posed a challenge for information managers.

Oil spill response can be conceived of as going through three distinct phases (table 24.1). Each has different information needs. The table highlights the shifting demands for information that occur as a spill progresses, and compares "typical timing" for a major response (over 150,000 gallons) with the timing in the *Exxon Valdez* case.

Not all spills follow precisely the phases shown in table 24.1. There is rarely a clear delineation between ending one phase and beginning the next. During phase two (mitigation of impacts) and into phase three (removing contaminants) of the *Exxon Valdez* response, information and associated management requirements expanded rapidly. Disseminating data rapidly and clearly, and in an easily duplicated format, was a major focus of the information management effort. Cleanup operations expanded rapidly. Escalating cleanup activity involved more sites, more monitors, and increased operations. It also resulted in expanded scientific support needs.

An information management team consisting of Coast Guard and National Oceanic and Atmospheric Administration (NOAA) personnel instituted data management, tracking, and communications systems. Information tracked included: (a) maps, reports, agreements, files, and photos; (b) samples (chain of custody when required); (c) personnel on scene, their training and health; (d) response costs; (e) logistics (planes, helicopters, rental cars, and hotel accommodations); and (f) other data-collecting groups/agencies and their willingness to exchange information.

#### OPERATIONS INFORMATION SUPPORT, 1989

During the first six to seven weeks of the response oil tracking and recovery information collection received major emphasis. The FOSC's scientific support team compiled oil-sighting data from federal, state, and local agencies as well as from Exxon. That information was presented in computer generated maps and distributed to on-scene response groups within hours of sightings. During the first sixty days of the response, more than 250 individual oil-sighting maps were produced. In addition, maps were created to show the locations of fishing grounds, bird colonies, marine mammal rookeries, haul out areas, and potentially contaminated marine plants.

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2. The account of operations support activities contained in the following pages was heavily excerpted from the publication: "CAMEO Valdez" (developed for the FOSC by the Hazardous Materials Response and Assessment Division, NOAA, July 1992), no. F813, FOSC Exxon Valdez Archive.

Pollution reports (Polreps) were the FOSC's principal means of informing the Coast Guard's chain of command, and keeping other agencies apprised of the current conduct of the response and future plans. Information managers who tracked response progress and raised environmental issues contributed information to the Polreps. Providing accurate and timely information was sometimes problematic.

TABLE 24.1

## Phases of Oil Spill Response and Related Information Management Needs

	Phase 1	Phase 2	Phase 3
Major concern	Contain the source	Mitigate the impacts	Remove the contaminants
Focus	Keep it in... the ship the boom the area	Keep it out ... of this bay of this rookery of this area	Get it off ... of the beach of the rocks of the biota
Typical activities	Pumping, corralling, burning, dispersing	Skimming, deflecting, tracking	Assessment, cleaning and removal
Typical status	Hectic, non-stop, crucial decisions, conflicting information, poor communications.	Communications in place Daily order established with patterns of long hours and many meetings.	Weekly order established with hours becoming more normal and fewer meetings.
Information needs	Readily available data on the product spilled, the local environment, and response options. Key situation graphics.	Hourly/daily tracking and reporting on specific product, location, sampling and response efforts.	Daily/weekly tracking and reporting of assessment and clean-up efforts. How clean is clean?
Typical products	Wall products Vessel position on chart Vessel diagram	Distributed products Overflight maps Situation summaries	Presentation products Briefing packages Assessment reports
Command Post	Contact point and rumor-control.	Central coordination and clearing house.	Corporate knowledge and presentations.
Typical timing	1 to 4 days	1 to 4 weeks	1 to 4 months
Exxon Valdez timing	7 to 10 days	9 to 10 weeks	25 to 30 months

Source: NOAA, "CAMEO Valdez."

Overflight reports serve as an example. Overflights were the preferred means of gathering data regarding oil-movement, though the reliability of data often depended upon the experience level of the individuals who served as observers. Inexperienced observers sometimes reported the presence of floating oil, but when closer investigations were made, "sightings" were often found to be windrows, biological

debris, or fresh (glacial melt) water overlaying salt water. False reports placed extra burdens upon information managers as well as operations personnel.<sup>3</sup>

Another complicating factor in securing overflight information was the amount of travel that was required. In many spill settings, comprehensive overflight assessments can be completed in one to two hours. During the *Exxon Valdez* response, however, it took nearly two hours simply to travel from Valdez to heavily impacted southwestern portions of Prince William Sound. Overflights invariably took four to five hours.<sup>4</sup> Some were even longer. Consequently, the few experienced observers were spending a great deal of time in transit. Time lapses between field observations and the resulting data distributions were unavoidable.

A major 1989 information controversy arose between the state and Exxon regarding the miles of shoreline impacted, the degree of oiling, and the levels of effort required to treat shorelines. These questions had major implications for cleanup planning. To overcome the difficulties created by these controversies, the FOSC's staff developed a unit of measure (the "clyde") as part of the Spill Treatment Work Progress Model to reflect shoreline cleanup progress.<sup>5</sup> The Spill Treatment Work Progress Model that was developed factored information about individual shorelines (length of the shoreline segment, predominant sediment type, degree of contamination, shoreline width, depth of oil penetration, percentage of surface covered, and amount of debris on the beach), to estimate the amounts of work required to treat each shoreline.

Initial tracking of floating oil, cleanup of oiled shorelines, and final cleanup assessment each produced its own data management needs. Throughout the 1989 response, the NOAA portion of the FOSC's information support staff maintained a nationwide electronic communications network. The system kept Coast Guard and NOAA headquarters and other response agencies apprised of daily spill response developments. It also served as a library that came to consist of nearly 325 individual detailed daily reports. Daily briefing packages were produced and distributed to Exxon, Alaska Department of Environmental Conservation (ADEC), other agencies, and concerned citizens. Briefing packages contained maps of the most recent overflight observations along with weather forecasts and special bulletins (such as fisheries closures information). Additional briefing materials were prepared for visiting senior government officials and news media personnel.

By mid-May of 1989, the response's emphasis shifted from tracking floating oil to shoreline treatment. The FOSC requested NOAA assistance in the creation of a real-time, on-scene database to compile and display the current status of shorelines throughout the treatment phase. The National Oceanic and Atmospheric Administration responded by producing the CAMEO™ Valdez 1989 (CV89) database, a

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3. Adm. P. Yost, conversation record by Capt. J. C. Crowe, Jr., 2 May 1989, no. C2162; and Capt. J. C. Crowe, Jr. (OSCAR administrator) mail message to CAC, 5 May 1989, no. C51, FOSC Exxon Valdez Archive.

4. Flight distances made it necessary, also, to set up in-the-field refueling stations.

5. The term "clyde" to describe work units probably came from NOAA workers. For want of a "catchy" identifying word, it was simply decided to use Vice Admiral Clyde Robbins's first name.

system designed to track the progress of Exxon's shoreline treatment operations and to forecast future production based on recent performance.

CAMEO Valdez 1989 was created in May of 1989 at the FOSC's Valdez offices. The system was developed for use on a Macintosh™ computer. The original version of CV89 contained a task force tracking component, treatment information for 1,108 shoreline segments, color-coded charts and pie-graphs, a list of contacts, interactive maps of Prince William Sound and the Gulf of Alaska, and a copy of the National Contingency Plan.

It was often necessary to locate landowners for involvement in cleanup approval processes (color plate). As the Prince William Sound map indicates, nearly all affected shorelines were federally owned. Most are managed by the U.S. Fish and Wildlife Service (FWS), though Native corporations (Chenega Village Corporation, Chugach Alaska Corporation, etc.) also have significant land holdings. Other major land managers are the National Park Service and the state of Alaska.<sup>6</sup> Oiled segments in western Alaska were recorded and tracked using procedures similar to those employed in Prince William Sound.

As cleanup operations were brought to a close in September, NOAA's scientific support coordinator (SSC) field responsibilities also diminished. Since the winter months were seen as a time for evaluation of 1989 cleanup efforts and as a period when 1990 field operations could be planned, NOAA maintained a presence on the FOSC's 1989–90 winter staff. National Oceanic and Atmospheric Administration personnel conducted limited winter shoreline condition studies, took part in interagency information exchanges, and played a significant role in helping to format the 1990 cleanup.

#### **OPERATIONS INFORMATION SUPPORT, 1990**

Shoreline assessment surveys were conducted in spring 1990. Survey teams used forms designed during the winter months through joint Exxon, NOAA, and ADEC efforts. Naming conventions were established so that data coming in from the field would be reported in a standardized manner (figure 24.1). In addition, a network for distribution of data from the field to data managers was developed.<sup>7</sup>

Spring shoreline surveys were carried out by spring shoreline assessment teams (SSATs or SATs) and anadromous stream SATs (ANAD SATs). Data from survey crews was faxed to Exxon each morning then distributed (by Exxon) to USCG, NOAA, ADEC, the state historic preservation officer (SHPO), and the Technical Advisory Group (TAG).

The CAMEO Valdez 1990 (CV90) database was used to compile information during the assessment, treatment, and demobilization phases of the 1990 cleanup. The design of

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6. Bureau of Land Management, "Alaska Land Status Map," June 1987, CMCIRS 029978.

7. National Oceanic and Atmospheric Administration (NOAA), "CAMEO Valdez," 16 and 29.

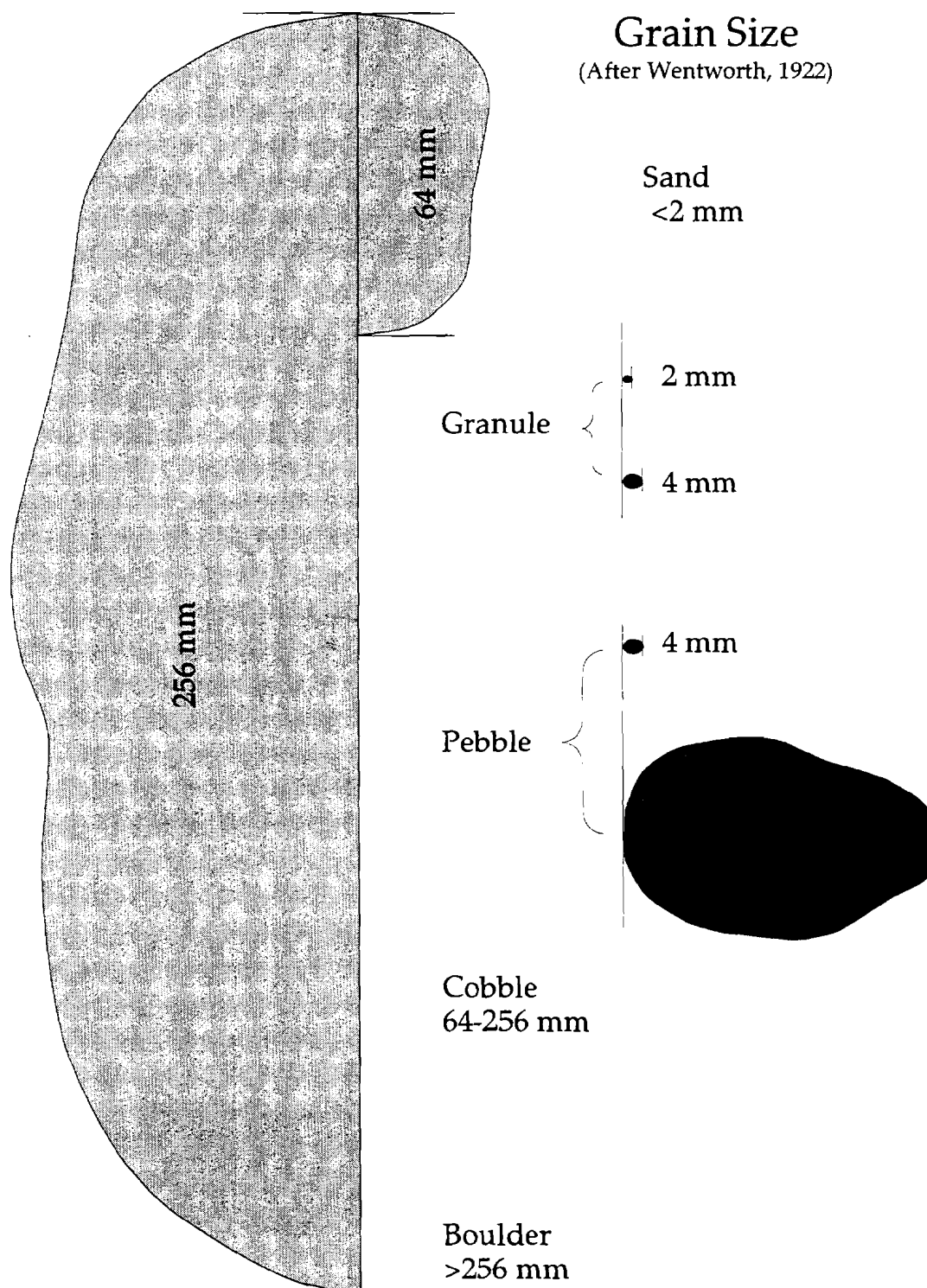


Figure 24.1. Guidelines used by field personnel to describe beach composition. Using standard and defined terms on field forms was crucial for consistent evaluation of shoreline conditions.

Source: J. Michel and M. O. Hayes, "Geomorphological Controls on the Persistence of Shoreline Contamination from the Exxon Valdez Oil Spill" (prepared for the Hazardous Materials Response Branch of NOAA, Feb. 1991), 41.

Note: Diagram is smaller than original field form

CV90 was based on the CV89 model with a few modifications. The segment designators developed in 1989 were further divided into subdivisions. In addition, data from anadromous streams was now tracked separately.

The CV90 database was created in the Macintosh program HyperCard™. It included a data card for each segment, subdivision, anadromous stream, treatment summary cards according to region, and with links to color graphs showing the distribution of areas requiring treatment versus those requiring no treatment in both Prince William Sound and the Gulf of Alaska.

#### **OPERATIONS INFORMATION SUPPORT, 1991**

The May Shoreline Assessment Program (MAYSAP) took place in three phases from 26 April–4 June. May Shoreline Assessment Program teams documented surface and subsurface oiling on forms, maps, sketches, and photographs. They also documented key intertidal biota, wildlife observations, and sensitive resources, and performed debris pickup and removal as appropriate. At the end of each day MAYSAP teams sent reports to Anchorage via daily mail (helicopter or boat). Exxon then distributed copies of MAYSAP reports to USCG, NOAA, and ADEC.<sup>8</sup>

CAMEO Valdez 1991 (CV91) consisted of two HyperCard stacks: "Static CV91" and "Static CV91 Slides." Static CV91 was made up of four sections: "segment" and "subdivision" cards, and two sections which presented summary data. Segment cards provided principally descriptive data, while work/treatment records were preserved in the subdivision portion of the base. Summary portions of the base provided a means of checking overall progress in terms of segments and miles treated, types of treatment, and the amount of work which remained to be completed. Summary maps depicting treatment areas in both Prince William Sound and the Gulf of Alaska were also maintained. The last update of these maps was completed on 28 July 1991.

No additional shoreline or cleanup assessment was conducted after the initial 1991 survey. Demobilization began on 15 July, with a small work crew remaining until the end of August to reapply bioremediation agents at selected sites.

#### **OPERATIONS INFORMATION SUPPORT, 1992**

In 1992 an even smaller cleanup operation was seen. Work groups served at once as shoreline evaluators, cleanup crews, and subdivision demobilizers. Since the teams included TAG members, cleanup decisions were made on the shorelines. NOAA data-support efforts were thus reduced to keeping site activity records for the eighty-one sites visited by 1992 assessment/cleanup teams. The National Oceanic and Atmospheric Administration's two representatives carried portable (Powerbook) computer equipment to the field. Activities were recorded daily, then transmitted back to the FOSC's offices where they were entered into a central database. The information recorded was similar to the earlier subdivision data, but it was never converted into the

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8. Ibid.

HyperCard format. For that reason, it is not technically accurate to refer to 1992 data as "CAMEO Valdez 1992."<sup>9</sup>

## THE FOSC HISTORIAN

When Vice Admiral Clyde Robbins arrived in Valdez for service in the response, he designated Lieutenant Commander Joel Whitehead to "follow me around...and take notes."<sup>10</sup> Vice Admiral Robbins, recognizing that he would be faced with a near continuous meeting schedule and important decisions, wanted documentation of the discussions, statements, and agreements which would be taking place during his busy days. This foresight on the part of Admiral Robbins, to have someone record his actions as he took over responsibility as FOSC, was the inception of the historian function, even though that was not the original intention. As the spill progressed this role of documenting the spill quickly evolved into the role of historian. While the main focus of attention remained on the cleanup, spill managers were beginning to recognize the need to document information for both the writing of the report and the eventual litigation.

In July, two major document control policy directives were issued, and Lieutenant Commander Whitehead began serving as FOSC historian.<sup>11</sup> The policies required that all original documents and copies of all other documents be forwarded to the historian. Subsequent changes allowed retention of copies that were annotated with significant marginalia and routing slips indicating who had seen a given document. As the spill went on, and as the desirability of a sound records system was accepted, its effectiveness increased and there was a greater reliance on the historian staff as a central records resource. Moreover, Lieutenant Commander Whitehead was given access to virtually all meetings in order to capture information for the historian's record.<sup>12</sup>

Formal historian's operations were described by Lieutenant Commander Whitehead as having evolutionary, rather than formal and abrupt, beginnings.<sup>13</sup> In addition to records management, a chronology was started and this progressed throughout the spill and became one of the primary historian functions.

As the size of the FOSC organization grew, so did the historian staff to handle additional responsibilities. An archive of all fax transmissions in and out was established. Since a large percentage of all communications were at one point or another faxed, this developed into one of the primary means of ensuring access to the

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9. C. Fries (NOAA), conversation record by Lt. Comdr. R. Gaunt, 21 May 1993, no. F828, FOSC Exxon Valdez Archive.

10. Lt. Comdr. J. Whitehead, interview by Dr. T. Leschine (FOSC staff), Lt. Comdr. R. Gaunt, BMI R. Travis, Anchorage, 16 July 1992, no. F665, tape, FOSC Exxon Valdez Archive.

11. Capt. D. Zawadzki, memorandum to distribution, 17 July 1989, no. C1979; Capt. A. Alejandro, memorandum to distribution, 9 Aug. 1989, no. C1458, FOSC Exxon Valdez Archive; and Whitehead, interview, 16 July 1992.

12. There were problems, however, with that arrangement. Officials from "other" agencies were sometimes uncomfortable with the presence of a Coast Guard officer who was making notes while high level discussions were taking place. Feeling that the historian's presence was perhaps a deterrent to open discourse, Vice Adm. Robbins later became selective about Lt. Comdr. Whitehead's participation in certain sessions (Whitehead, interview, 16 July 1992).

13. Whitehead, interview, 16 July 1992. Lt. Comdr. J. Whitehead could not recall a "particular event or date" at which he began serving as historian. He reported that when he began serving as historian his involvement with Vice Adm. Robbins tapered off significantly.

documentation needed. As the documents were accumulated a system of files evolved. Daily files were developed consisting of the operational reports from the various field units and other key documents needed to write the chronology (e.g., the Polreps, the weather reports, the Exxon daily reports, and the ADEC weekly reports). A correspondence archive was established, and a computer index of the documents in it was developed by the historian staff. Other archives evolved as categories of information found their way into the historian archives. Many documents were placed in more than one archive if they were relevant to more than one subject area.

Whitehead left Alaska, returning to G-MEP in October. Plans called for him to begin writing the FOSC's report, while the staff would remain in Alaska to provide research assistance and continue the maintenance of records.<sup>14</sup> Prior to departing, a database manager was added to the staff. The manager was responsible for the archives and the computer index of the correspondence. The historian staff also assumed responsibility for writing summaries of the Operations Steering Committee meetings and taking notes of the daily teleconference of incident command post (ICP) commanders.

An additional directive was signed by the new FOSC, Rear Admiral David E. Ciancaglini on 5 October 1989. A trend towards the centralization of spill related records with the historian developed as a result of several factors. First, it became obvious that complete records benefited everyone. Anyone who needed to find a copy of a document could get a copy from the historian when they discovered that either their own files were incomplete, or information from another department was needed. Generally, the historian staff was able to accommodate most requests and it became apparent that the historian files were better maintained than the other files.

During the winter months the historian's section assumed another significant responsibility. Records containing information about cleanup activity at each individual segment had been maintained by the FOSC's operations section throughout the 1989 cleanup season. These segment files were operationally important, and substantial in number. The historian's staff had proven itself reliable as records managers and these operational materials were transferred to them, freeing operations staff members to focus on field activities.

While seemingly insignificant, this was a milestone in the evolution of the historian function. The custody and maintenance of files critical to the function of another department were entrusted to the historian for the first time, thus freeing up operations personnel to pursue oil. This system necessitated a cooperative relationship between the operations and historian staffs. Operations would set deadlines and priorities for information requests and would abide by the historian's policies regarding document security. The personnel who physically handled all historian records, including search, copying, and refiling, were always historian staff. This arrangement

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14. Soon after leaving the FOSC assignment, Lt. Comdr. Whitehead found himself faced with conflicting responsibilities. Commandant (G-MEP) had important responsibilities for him, yet there were those who expected him to complete the FOSC report. Though he returned to FOSC assignments during two brief periods in 1990, Lt. Comdr. Whitehead eventually relinquished his report involvement to others.



proved successful and evolved into the data distribution function (which is covered later in this chapter), and remained throughout the spill.

New circumstances and new personnel were brought to the FOSC structure in 1990. Once again historians found it necessary to devise strategies to ensure that all appropriate documents were copied to the archives. A key move involved assigning FAX handling and distribution responsibilities to a member of the historian's staff. This relieved other personnel from these time-consuming duties and resulted in the successful capture of copies of all transmissions for the historian's files. Additional measures that strengthened document retention involved the placement of a standard workstation in the historian's office for the purpose of archiving E-mail, and an improved correspondence routing system.

During the next few months, attention turned towards possible use of the FOSC archives in future litigation. Plans were devised to organize the files into distinct archives.<sup>15</sup> Departmental records were consolidated into the historian's system and organized into "user-friendly" formats. Department records that were no longer active were brought into a permanent record status, while keeping them accessible to their originating departments should needs arise.

The end of the 1990 cleanup season brought further consolidation of spill response records. Historian staff personnel assisted in final closure of incident command posts with emphasis on retrieving and returning records to the central historian's files.<sup>16</sup> When all documents needing sorting, classification, and filing were finally assembled, there were approximately eighty-five cardboard boxes of materials. A meeting, with the *Exxon Valdez* case coordinator (G-MS), the CGD 17 legal officer, the CGD 17 branch legal officer (assigned to the Anchorage U.S. Attorney's Office), and the FOSC historian staff archivist, established a policy of allowing historian staff members to discard duplicate and "irrelevant" documents.<sup>17</sup>

The policy recognized that Coast Guard interests were best served by the continued centralization of records, and the best location for that was with the FOSC. All records were reviewed and processed by the FOSC historian with duplicate documents being destroyed. The centralizing of *Exxon Valdez* related documents ensured that a copy of a given record was retained by avoiding the possible destruction by a unit who "assumed" someone else had saved a copy. Moreover, the alternative was the retention of large numbers of duplicate documents. Since other Coast Guard units could not destroy *Exxon Valdez* materials, it provided the incentive to send their *Exxon Valdez* related documents to the FOSC.<sup>18</sup> In some cases the records were developed into separate archives. This represented the final evolution in the centralization of FOSC records and the growth of the FOSC historian archives.<sup>19</sup>

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15. USCG, "Original Archive Plans," 1 June 1990, no. W1965, FOSC Exxon Valdez Archive.

16. USCG, "1990 FOSC/CGD17 Transition Plan," 15 July 1990, no. W1327, FOSC Exxon Valdez Archive.

17. Capt. M. C. Grace, memorandum to distribution, 19 Dec. 1991, no. F494, FOSC Exxon Valdez Archive.

18. Lt. Comdr. H. Young, memorandum to Comdr. D. Maguire, 11 July 1991, no. F792; and Capt. M. C. Grace, memorandum to commanding officer (R&D Center), 14 May 1992, no. F396, FOSC Exxon Valdez Archive.

19. BM1 R. Travis, "FOSC Historian," 12 Apr. 1993, no. F484, FOSC Exxon Valdez Archive.

Archive development proved an ongoing process. In the end, the *Exxon Valdez* oil spill archives included the following major components (table 24.2):

TABLE 24.2

Components of the *Exxon Valdez* archives

Component	Typical Items Contained in the Component
Daily File Archive	Contains a file for each day through September 1990, and "as needed" thereafter. Includes Polreps, agency operational reports, weather reports, and public affairs documents. Has served as a basic reference file for chronology writers and repository for daily operational materials. Includes some technical minutia.
Message Archive	Contains all FOSC message traffic, including discrete sections for MSO and vessel message traffic. Filed according to date-time-group (DTG).
Segment Files	Largest single archive. Contains operational reports and correspondence for each individual segment, including subdivisions, of shoreline evaluated by FOSC during the spill. Filed by individual segment number. Files also contain photographs taken during surveys of each segment.
Correspondence Archive	Primarily incoming and outgoing FOSC correspondence. Includes other documents and materials. Has a supporting computer data base. Organized chronologically.
Audio-Visual Archive	Contains VCR tapes, audio tapes, slides, slide shows (some with text), photographs, computer disks, and computer back-up tapes. Minimal computer index. (Segment file photographs are not part of the A/V archive.)
Project Accounting Archive (CWR)	Contains materials related to 1991 cleanup costs. Federal settlement provisions required FOSC approval of all cleanup expenditures during that time. Fund requests were called Cleanup Work Requests (CWRs). The Project Accounting Archive contains each CWR with activity description and cost data. Filed according to CWR numbers.
311K Archive	Contains documentation of FOSC costs for individual days during the response. Organized chronologically.
Property Archives	Contains purchase order invoices and billing documentation for FOSC purchases. Filed according to sequential purchase order numbers during each fiscal year.
MLCPAC Payables Archives	A discrete archive containing materials sent to the FOSC historian by the finance office at the Pacific Area Maintenance and Logistics Command (MLCPAC). Contains payment records and documentation for various fiscal aspects of the response. Materials were forwarded for archival as part of Coast Guard wide centralization of <i>Exxon Valdez</i> records.
Personnel Archive	Contains copies of all orders (with amendments) for each USCG individual who served as a member of the FOSC staff. Also contains personal award letters and documentation.
USCG Branch Legal Archive	Discrete file containing materials forwarded to the FOSC historian by the Coast Guard Branch Legal Officer in Anchorage. Generally relate to investigations of the incident itself. Were forwarded for archiving as part of the Coast Guard wide centralization of <i>Exxon Valdez</i> records. Archived IAW an index developed and maintained by the original custodian.
USCG R&D Center Archive	Discrete archive containing materials forwarded to the FOSC historian from the USCG Research & Development (R&D) Center in Groton, Connecticut. Includes records of R&D Center work on methods and technologies used in the cleanup. Forwarded for archiving as part of the Coast Guard wide centralization of <i>Exxon Valdez</i> records.
Fax Archive	Contains copies of each fax into and out of the FOSC headquarters. Main backup to individual archives and primary redundant system for retention of information. Materials are filed by date and as "incoming" or "outgoing."

Source: FOSC Historian BM1 Travis.

In 1993 plans were made to deliver FOSC records to the National Archives–Alaska region (Anchorage). There they are to be held at the Federal Records Center for ten years. Then, as documents designated as having "permanent historic value," they will be formally accessioned by the National Archives–Alaska region.<sup>20</sup> As the final

20. USCG, "Request For Records Disposition Authority to National Archives and Records Administration (NIR)," 19 Mar. 1992, no. F842, FOSC *Exxon Valdez* Archive. It is unlikely that *all* records will be placed into the archives after

months of FOSC operations concluded, a significant portion of the archives were imaged on compact disks. These disks were to be left in CGD 17 custody for use in responding to inquiries made after FOSC records are moved to storage.

## DATA DISTRIBUTION

When the FOSC introduced the Technical Advisory Group (TAG) for 1990 operations, it brought a new and expanded role for the historian's staff. TAG required extensive data support. Since the historian's shop had recently assumed operations record management responsibilities, its assumption of the data support role to TAG was a natural evolution. The fundamental concept behind data distribution was to provide all interested parties an opportunity to comment upon specific treatment plans for each segment. If a landowner objected, for example, to the use of bioremediation, the data distribution system advised the landowner of the planned treatment specifics, and furnished an opportunity to express objections. For the historian's staff, this proved to be a substantial task. A single subdivision packet normally included ten to twenty pages of information. Producing copies for each "interested party" sometimes required production of as many as sixteen sets of a single packet. A mailing for one segment thus required production of as many as 320 pages to be copied, collated, and delivered.

Over a thousand subdivisions were processed. The 1990 data distribution workload necessitated the assignment of two additional staff members in dedicated billets.<sup>21</sup> These information packets were prepared for immediate TAG review so that treatment could be undertaken when the cleanup schedule allowed. The complex nature of scheduling cleanup teams for environmental constraint windows, tides, and in coherent groups so that cleanup squads minimized travel, necessitated that no work be delayed due to the appropriate paperwork not being completed ahead of time. Further, each land manager and affected agency had to be given time to comment on the recommendation of TAG in time to make their viewpoint known to the FOSC.

A Coast Guard standard work station database was developed to support the data distribution program. Spill managers were thus able to track the progress of each shoreline segment in the system. Tracking of the status of each segment, the TAG recommendation, and the assembling of relevant comments for presentation to the FOSC required routine sixteen hour days, seven days a week and the intermittent addition of additional personnel until approximately mid-July.<sup>22</sup> The master files were designated as historian archive materials and access was limited to historian personnel. All filing and refiling was done by the historian staff.

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the ten year records center phase. Invoices, time sheets, and other similar routine documents are not normally kept on a long-range basis.

21. USCG, "FOSC Anchorage, Summer 1990 Billet List," 13 Mar. 1990, no. W548, FOSC Exxon Valdez Archive. The lists includes billets S-27 and S-28, both listed as data distribution.

22. As an example, YN3 S. Brennan, a member of the data distribution staff, worked all but one day during which she was available for duty during May 1990. April and June provided similar experiences. Minimum ten-hour days were the norm.

Although the work load in 1991 was substantially smaller, the same system of historian staffing of data distribution was used to support the TAG operations and the process of incorporating each years records into the master segment file continued.

In 1992 the limited nature of the final survey and cleanup obviated the necessity of a separate data distribution staff. The function was handled by the remaining historian staff.

## REQUESTS FOR INFORMATION

As a high-profile event, the *Exxon Valdez* oil spill attracted a variety of information requests, ranging from casual inquiries to formal requests from high-ranking authorities. When an inquiry was judged as a public affairs matter, the public affairs staff furnished a response, often with background help from the historians. Historians were also frequently called upon by other FOSC departments for research and documentation. Official Coast Guard information requests came from throughout the organization, including the commandant.

Information contained in the FOSC archives served the needs of other agencies as well. The Alaska Department of Natural Resources (ADNR), for example, dispatched a researcher to compile information related to a wildlife study. The FOSC staff assisted by providing appropriate files, a suitable place to work, and refiling the materials when the researcher completed his work.<sup>23</sup>

A more complex and sensitive concern was the matter of Freedom of Information Act (FOIA) requests. A catastrophic oil spill becomes the focus of substantial litigation. One need, therefore, is to balance the government's potential involvement in litigation with the public's right to know. In particular the Coast Guard must avoid the appearance of withholding information. The commandant of the Information Systems Division of the USCG Headquarters Office of Command, Control, and Communication (G-TIS) developed policies for dealing with FOIA matters. The need for a uniform policy resulted in several all districts (ALDIST) messages from G-TIS.<sup>24</sup> The first directive, issued 5 May 1989, directed release of maximum amount of material consistent with federal law, referencing specific provisions of the Coast Guard FOIA manual. Coordination with G-TIS was required. Coast Guard units were directed to send copies of all requests, responses, and related materials to G-TIS as they were processed.<sup>25</sup>

In July, release authority for *Exxon Valdez* FOIA information requests was transferred to G-TIS.<sup>26</sup> This change in policy was motivated by the need to standardize Coast Guard responses to FOIA requests. G-TIS often sought research assistance from FOSC personnel as it generated FOIA responses.

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23. The example cited involved a 1992 Harlequin duck study and a single ADNR researcher.

24. The evolving Coast Guard policy on FOIA requests for information and document retention are contained in USCG, ALDIST messages 96/89, no. C973; 116/89, no. C1198; 136/89, no. C414; and 262/90, no. F180, FOSC Exxon Valdez Archive.

25. Ibid.

26. USCG, ALDIST message 96/89, no. C973, FOSC Exxon Valdez Archive.

The FOSC's staff included a FOIA officer during most of 1989. That individual coordinated FOIA activities, including relationships with G-TIS. Subsequent to the summer of 1989 the historian staff and the FOSC administration officer handled all FOIA responsibilities. As the FOSC archives further expanded, the historian shop served as a growing asset for G-TIS FOIA response needs.

The arrangement which centralized FOIA information release authority at G-TIS remained in effect (having been continued by a 1990 ALDIST message) through December 1992.<sup>27</sup> Starting in 1993, the FOSC assumed responsibility for responding directly to FOIA requests for FOSC documents.

### LITIGATION SUPPORT

It was anticipated that the federal government, and several of its agencies, including the Coast Guard, would be parties in litigation arising from the *Exxon Valdez* oil spill. In June 1990, the U.S. Department of Justice (DOJ), the federal government's lead agency for litigation, notified other agencies that they were planning to microfilm all *Exxon Valdez* related documents.<sup>28</sup> Work with FOSC documents was delayed until they were consolidated into a single location. In the meantime, a series of directives specified that no Coast Guard records shall be altered, destroyed, or sent to a records center unless cleared with USCG Headquarters Commandant Claims and Litigation (G-LCL).<sup>29</sup>

To facilitate the filming of FOSC records a protocol was developed to assure record security and completeness. The historian staff removed the records from the archives, maintained a log of what had been removed, and refiled them upon return. All filming was done within the FOSC office spaces and archives were reviewed prior to CACI filming to accommodate Privacy Act considerations. Since cleanup operations were to continue, filming operations were suspended prior to the mobilization for 1991 summer operations.

During the winter of 1991–92, preparations for additional filming continued. The protocol that had been developed functioned well in establishing a system for tracking which documents had been filmed and which had not been filmed. A visit by Coast Guard attorneys in December of 1991 coordinated the filming and affirmed the methodology involved.<sup>30</sup> With the signing of the second settlement agreement in September of 1991, DOJ's interest in filming all the remaining records waned. In January and February of 1992, attorneys for Exxon and the known remaining litigants visited the FOSC archives and surveyed those documents which had not yet been filmed. They provided specific lists of the remaining documents they wished filmed and the filming of those documents was completed.<sup>31</sup>

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27. USCG, ALDIST message 262/90, no. F180, FOSC Exxon Valdez Archive.

28. M. Haffner (DOJ), letter to Capt. R. Doherty, 11 June 1990, no. W1847, FOSC Exxon Valdez Archive.

29. USCG, ALDIST messages, 248/90, no. W1952; 003/91, no. F505; 014/91, no. F504; 059/91, no. F503; 115/91, no. F500; 209/91, no. F502; and 268/91, no. F501, FOSC Exxon Valdez Archive.

30. Capt. M. C. Grace, memorandum to distribution, 19 Dec. 1991, no. F494, FOSC Exxon Valdez Archive.

31. USCG, "File of Documents Provided to Exxon/Alyeska/Private Parties Regarding Subpoena," 24 Feb. 1992, no. F795; and Comdr. J. Ahern, conversation record by Comdr. D. Maguire, 17 June 1993, no. F843, FOSC Exxon Valdez Archive.

The existence of a centralized and dependable archive system proved to be a valuable legal-support asset. Providing assistance for DOJ needs did not pose major difficulties for FOSC personnel, largely because the desired materials and files were well organized and easily accessible. The relationship with DOJ contractors also proved helpful during times when each agency worked cooperatively to complete document searches.

The records system enjoyed a great deal of stability during its four-year lifetime. During the final three years and eight months of FOSC operations, the same staff member served as archivist.<sup>32</sup> The historian's files proved to be an invaluable asset for the FOSC report writers. The emphasis upon a dependable archiving system required strong support from the FOSCs. The issuance of statements and official policies from both Vice Admiral Robbins and Rear Admiral Ciancaglini, along with strong support from chiefs of staff helped establish the significance of the historian's section in the eyes of the entire staff. In the absence of such high-level commitment to data preservation, the task of establishing and maintaining a high-quality system would have been substantially more difficult.

## EQUIPMENT FOR INFORMATION MANAGEMENT

Approximately eight years before the *Exxon Valdez* oil spill the Coast Guard made a broad-based commitment to standard work station data processing systems. The idea was to standardize data systems throughout the organization, and to facilitate broad interface capabilities. Units were commonly called Coast Guard standard work stations (SWSs). Though the systems were apparently serving the Coast Guard effectively in most settings, they did not adapt well to circumstances during the first year of the *Exxon Valdez* response. As a result, the FOSC experienced what was later termed "a void for information gathering and processing" until other data systems became available.<sup>33</sup> Response managers later listed SWS shortcomings that eventually led to FOSC use of non-standard (Macintosh) equipment and software. The following items are a sampling of problems and system shortfalls that caused this departure from standard procedures to take place:

\*SWSs were not considered sufficiently portable to meet the needs of an operation which was subject to frequent personnel turnover, and to offer rapid start up within a hastily organized operation.

\*SWS operations normally required a systems manager. There was, in the opinion of some authorities, a shortage of capable Coast Guard systems managers in 1989. Proper use of SWS equipment also required operator training. One analysis held that the Coast Guard's traditional budgetary inadequacies had caused relegation of data management needs to a low-level priority. That condition may have accounted for a lack of data management "surge capacity."<sup>34</sup>

32. Orders in the personnel archive show that the archivist, BM1 R. Travis, was assigned to the spill as part of the historian staff from 1 Nov. 1989 until in concluded in 1993, for longest assigned tenure of the spill. QM2 Kasten was assigned from 19 Apr. 1989 until Aug. 1990, at that time the longest assigned tenure of a FOSC personnel.

33. USCG (G-MER), Tank Ship Exxon Valdez: Oil Spill Management Analysis Debrief, in "G-MER Conference Report" (summary of conference held in Alexandria, Virginia, 4-6 Dec. 1989), no. W292, FOSC Exxon Valdez Archive, 57.

34. Ibid.

\*SWS equipment was not considered to be "user friendly." One individual, a research mathematician, reported finding "the UNISYS system difficult to use," but noted that he had seen "the Admiral use a Macintosh after a half hour of indoctrination."<sup>35</sup> Another user suggested that the Coast Guard's adoption of SWS format was based on "technicians' infatuation with the products. On the other hand, "I needed a system that was user friendly," he said.<sup>36</sup>

\*SWSs were not compatible with systems used by National Response Team (NRT) agencies.<sup>37</sup> In particular, NOAA came to the response with its Macintosh-based CAMEO system. Exxon also made an early decision to employ Macintosh equipment for its varied response operations.

Macintosh equipment began appearing on Coast Guard equipment inventories during the 1989 response. The CAMEO Valdez database was a "real time tracking system" that was both a useful management tool, and a user-friendly system. It was possibly for increased access to CAMEO Valdez that the Coast Guard began accumulating Macintosh capabilities. Among the first acquisitions was a 19 May lease which brought two Macintosh setups to the FOSC's offices.<sup>38</sup> Others were added later. The FOSC components that employed Macintosh equipment were the public affairs and historian's offices. Both turned to Macintosh apparatus in an effort "to get some machines that would work," according to one source.<sup>39</sup>

Though problematic throughout most of 1989, SWSs remained as the official FOSC information processing equipment. Apple Computer manufactured products provided assistance in some phases of operations, but the Coast Guard found that untrained personnel couldn't necessarily use even "user-friendly" equipment. In July, for example, a report from ICP Kodiak complained of assigned personnel being "key board illiterate." The ICP was thus faced with an inability "to fully utilize the capabilities of the Macintosh system."<sup>40</sup>

Some individuals remained unenthusiastic about the seeming trend towards "nonstandard" equipment. Noting what he termed "a tendency for everyone in the public affairs program to go 'MAC-Crazy'," the chief, public affairs staff (G-CP) reminded subordinates that "it should be no surprise to learn that the Coast Guard has for several years had a service wide standard terminal system, now built by UNISYS." He declared, "One or two MACs" might be appropriate for desktop publishing, otherwise, SWSs should be employed for all other conventional office tasks.<sup>41</sup> The view that personnel have an obligation to follow standard organizational procedures probably has a much broader base than is readily apparent.

The 1990-91 winter plan called for a substantial FOSC personnel draw-down as well. Whereas the 1989-90 winter staff had included command staff, operations personnel,

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35. Ibid., 59. Some Coast Guard standard workstations were UNISYS products, but there were earlier versions that were produced by other manufacturers. The term "UNISYS" in not, therefore, technically interchangeable with the term "Coast Guard standard workstation."

36. Ibid., 60.

37. USCG, Need for a Portable, Flexible and User Friendly Computer System for E-Mail, Personnel Management, and Other Information Needs, in "G-MER Conference Report," 61.

38. Juneau Electronics Co., invoice #43356, 19 May 1989, no. W1298, FOSC Exxon Valdez Archive.

39. Whitehead, interview, 16 July 1992.

40. Lt. Comdr. J. Reed, memorandum to AOSC WAK, 4 July 1989, no. C773, FOSC Exxon Valdez Archive.

41. Capt. R. D. Peterson, "Office Automation," no. C330, FOSC Exxon Valdez Archive.

planners, and field complements, the 1990–91 winter structure included just five persons. All were projected to serve in roles related to the production of the FOSC's report.<sup>42</sup> Since report production was already geared to use of Macintosh equipment, Apple manufactured products became dominant. With adequate supplies of computer equipment available, the staff was permitted choices. The remaining staff had a preference for Apple equipment. Standard work station capability was maintained, largely to interact with other Coast Guard organizations, but Macintosh equipment was placed at most work stations.

When the 1991 response (smaller, but still a rather formidable operation) began, SWS equipment was reactivated. Approximately eight SWSs were in use during summer months to help carry out field operations and to support in-house administrative tasks. The number of SWSs was exceeded by Macintoshes at the FOSC's offices during that time, and when summer operations were reduced, following completion of response work, most of the SWS equipment that remained was put into winter storage.

Thereafter, Macintosh equipment carried the heaviest portion of the FOSC's information management load. Since the close of 1991 cleanup operations, including the period of 1992 cleanup operations, two SWSs were maintained to serve official FOSC needs. Production of the FOSC report was the largest task facing the staff during latter stages of the organization's existence. The staff used Macintosh equipment almost exclusively. Public affairs functions, financial management, property accounting, and most word processing needs were accomplished through use of Macintosh resources.

## **SUMMARY**

The ability to deliver timely, accurate, and meaningful information to decision makers was a major hurdle throughout the response. During the first days of the response establishing where the oil was going, what damage it would do, and how to clean it up, were driving the need for information. In the latter stages of the response, the historian staff writing the FOSC report, attorneys involved in litigation, scientists determining the damage done, and accountants fixing the costs all had needs for information and they became the principal consumers of information. The transition from one group to another as principal user of information was evolutionary. From the onset of the spill all the groups needed information, but the dominance of a particular user set the priority at any given time. Throughout much of the response operational decisions affecting the cleanup held the highest priority. While other users came into prominence when attention focused on events such as writing the FOSC report, responding to subpoenas, and conducting financial reviews.

It was impossible to know what information would be important to whom during the life of the oil spill and the legal and scientific wrangling that would go on long after the response was over. As this became self-evident to the spill managers, the role of those

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42. USCG, "FOSC/CGD17 Exxon Valdez Transition-90 Plan," 10 August 1990, appendix 1, no. W1598, FOSC Exxon Valdez Archive. Two other billets were added to the winter staff during winter months. By contrast, the previous year's FOSC staff numbered forty-one.



managing information expanded. It was the need for usable information that drove the creation of CAMEO Valdez to track the location and degree of oiling, "Clyde" to measure work effort to treat the shorelines, and data distribution to ensure all parties involved in cleanup decision making had the same information.

The process of gathering, organizing, presenting, and archiving the information in a fashion useful to the end user went through a number of changes. Much of the change was driven by the desire to improve both the production efficiency and quality of the information being used. This process was most evident in the continuous expansion of the role of the historian and the changes in the computer equipment utilized by the FOSC's staff. Both efficiency and quality improved with the use of "user-friendly" and flexible computer equipment.

The majority of the tasks undertaken with the disestablishment of the FOSC related to information management. Records were deposited with the National Archives, a significant percentage of the documents were imaged onto compact discs to facilitate easy recovery over the years, and *Exxon Valdez* records from other Coast Guard units were consolidated for a future archival project.

## CHAPTER 25. PROBLEMS ENCOUNTERED (AND LESSONS LEARNED)

### OVERVIEW

Of the many ways in which the *Exxon Valdez* response effort was unique, its sheer scale is perhaps the most arresting. Billions of dollars were spent at an activity which, before and since, has seldom seen costs in even the high tens of millions of dollars. The *Exxon Valdez* response was marked also by unprecedented governmental and media attention and by political conflict through much of its life, and it proved to be as precedent-setting in the many details of organizational design that evolved over its multi-year course as it was in scale. The unique organizational challenges the response effort presented are the primary focus of this chapter.

The chapter is organized so that findings and recommendations of primary relevance to broad questions of organization and intergovernmental coordination are addressed first. Issues related to the planning and execution of operations in the field, including the effects of constraints imposed by the natural and human environment, are considered next. Finally, questions which are of primary relevance to how the Coast Guard dealt internally with the demands placed upon it by the response are considered. The separation among these three areas is necessarily approximate as many of the most salient issues contain elements which touch upon each of these three domains. Discussion of issues is limited in this chapter, but notes are provided to refer the reader to relevant material in earlier chapters.

Despite the great number and complexity of the problems encountered in the more than three-year-long *Exxon Valdez* response effort, it represents but a single case. The recommendations in this chapter are necessarily rooted in what we have been able to learn, with the benefits of hindsight, from examination of this single incident. We cannot realistically take into account such important factors as the enormous changes in oil spill prevention and response brought by the passage of the Oil Pollution Act of 1990 (OPA 1990) to the extent that they should be.

Moreover, the Marine Environmental Response Division at U.S. Coast Guard Headquarters has been engaged, under authority of OPA 1990, in its own multi-year effort to rewrite substantially the rules which govern oil spill response. We do not enjoy the benefits they have had, through the rule-making process, of extensive interaction with the numerous interests whose points of view must be heard in deciding how best to improve readiness in the event of future oil spills, and we do not presuppose to speak for them.

As with so many other facets of the *Exxon Valdez* response, the situation in which the Federal On Scene Coordinator's (FOSC) report was prepared does not conform with the vision encompassed by the rules which govern its production. Ordinarily, the FOSC report would be the only formal document produced by the Coast Guard in the name of

identifying changes which could be made to response procedures in light of the lessons of recent experience. In this case, the report should be seen as but one of many inputs to a continuing and far-reaching process of change.

## THE FEDERAL VS. STATE INTEREST IN OIL SPILL RESPONSE

### FINDINGS

1. The legitimacy of both the federal interest and that of states whose waters are affected by oil spills are recognized in the Clean Water Act. Conflict occurred between state and federal authorities in the *Exxon Valdez* response because of differing interpretations of rights and obligations by each party.

The FOSC saw himself obliged to consult with the state but also bound by the standards of the Marine Safety Manual, which speak both to showing restraint at the point where operations to remove oil begin to cause more environmental harm than oil left in place, and to avoiding excessively costly cleanup that makes "insignificant contribution to minimizing a threat to the public health or welfare, or the environment."<sup>1</sup>

State authorities argued for use of intrusive cleanup techniques in situations where they felt particular resource values or human uses warranted extra efforts to remove oil. In their desires to restrict bioremediation use to a "finishing" role, they also advocated a numerical standard on the degree of cleanup to be attained prior to its use. In rejecting both these arguments, the FOSC fell back on a basic implication of the Clean Water Act, that the state was free to act under its own authority once the federal removal action was complete.

2. The conflict with the state involved significant questions of process as well, as state officials claimed rights of concurrence with decisions made by the FOSC, leading in their view to joint cleanup direction under a single umbrella that incorporated both federal and state standards.<sup>2</sup> This did not occur. The Coast Guard rejected the state's claim to concurrence, while affirming that the FOSC would act in consultation with the state on decisions that affected the oil spill response.

The National Contingency Plan (NCP) does not envision the kind of state-federal negotiated cleanup standard that the state desired, and the FOSC had neither the authority nor the desire to grant the concurrence in decision making that the state sought. The NCP offered virtually no effective remedies for this and other state-federal disputes that occurred over the course of the *Exxon Valdez* response.

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1. USCG, "Marine Safety Manual," Commandant Instruction no. M16000.7, chap. 7, sec. 7.B.5, parts b and c.

2. This argument came out most clearly in a meeting the Alaska Department of Environmental Conservation (ADEC) Commissioner Dennis Kelso and special assistant Ernie Piper had with Admiral Kime, the commandant, in July of 1990, discussed in chapter 7, "Shoreline Cleanup in 1990."

## RECOMMENDATIONS

The FOSC should remain the final authority for response decisions, after having consulted with the state and other involved parties. In considering various approaches for dealing with future federal vs. state interests, a negotiation of mutually acceptable standards with the FOSC remaining the final authority for response decisions could potentially have served the joint interests of increased harmony and increased cleanup effectiveness more so than did the NCP framework that governed the *Exxon Valdez* response. For this to have happened however, such an agreement would have had to serve both federal and state interests, incorporating for example acceptance by the state of oily waste disposal within Alaska as well as approaches to oil removal that were mutually acceptable to both state and federal authorities. Under current law the federal interest appears to include that a balance be struck between the benefits of oil removal and the cost and environmental harmfulness of the removal methods employed.

The negotiation of general framework agreements between state and federal authorities appears to be greatly facilitated by OPA 1990. Memoranda of agreement between Coast Guard districts and the states could address in advance of a spill the nature of the interface to be achieved between state and federal interests in future response actions. The CERCLA-based consent decrees between state and federal authorities for defense waste cleanup provide possible models for after-the-fact agreements once the extent of spill-related damage is understood.

### **THE FOSC AS THE MONITOR OF EXXON'S PERFORMANCE: SHOULD THE RESPONSE HAVE BEEN FEDERALIZED?**

## FINDINGS

1. Under the NCP, the FOSC had to choose between monitoring Exxon's response efforts or taking direct charge of the cleanup himself, utilizing federal funds and resources through the process of "federalization." The decision to follow the monitoring approach was widely questioned at the time, particularly by state officials. A direct federal response would however have presented many problems while offering few clear benefits.

Exxon's prompt assumption of responsibility, coupled with the realization that the 311(k) fund could not support the level of effort required, led to the decision to follow the monitoring approach.<sup>3</sup>

Had the direct federal action alternative been pursued, the shortfall of 311(k) funds would have likely necessitated emergency appropriations, and even a well funded federal procurement mechanism, operating under suspension of the normal procurement rules, would have been severely challenged in its ability to secure sufficient equipment and trained personnel as rapidly as the need demanded.

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3. This is the decision typically made when the responsible party is both willing to conduct the cleanup and judged to have sufficient resources for the task.

The putative advantages of federalization, in allegedly greater control over the direction and pace of the response, were unlikely to have materialized given the many limitations on an FOSC's authority that are built into the NCP.<sup>4</sup>

Exxon committed far more resources to the cleanup than any previous spill has seen. It is hard to see how a federalized effort could have marshaled comparable levels of financial support,<sup>5</sup> sustained an effort over as long a time, or obtained results in the field comparable to those achieved by Exxon.

2. Exxon's response was initially confused and poorly coordinated. Over time, however, the company developed a strong sense of mission and dedication to the task, utilizing its considerable organizational and technical capabilities and vast resources to perform to very high standards. Initially in 1989, Coast Guard leaders did not feel totally confident that Exxon would commit to a long-term sustained cleanup effort that included treating western Alaska with the same level of effort as Prince William Sound. However, later discussions revealed their intention to continue cleanup as required by the FOSC.

Exxon's natural strengths as a corporate entity were in planning, procurement and operations. Initially, the company proved to be less able at deployment into the field. Over time, the Coast Guard leadership and others came to admire greatly Exxon's very strong personnel management system, and the way the Exxon leadership saw the response as a corporate-wide effort.<sup>6</sup>

3. The installation early in the response of senior, experienced flag officers in the FOSC position appears to have contributed to strengthening and maintaining the sense of mission that Exxon had. The considerable use made of "back channel" communications between the commandant and senior administration officials and corporate leaders appears also to have worked to reinforce at the highest levels what the federal government's expectations for Exxon's performance in the field were. Over time, the objectives of Exxon, the National Oceanic and Atmospheric Administration (NOAA), and the Coast Guard leadership converged considerably; by 1991 the state also had come largely to share the objectives held by the other major parties.
4. The FOSC gained an additional measure of control over Exxon in 1991 when, as a result of the settlement agreement, authority to pre-approve the response-related

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4. Such limitations are discussed more fully in chapter 20, "Response Management Authority." Financial implications of federalization are discussed in chapter 23, "Finance and Accounting." The pros and cons of federalization as seen by various parties are discussed in chapter 4, "Evolution of the FOSC's Response Organization."

5. One of the most significant changes wrought by OPA 1990 is in the creation of a very large trust fund available to finance future response efforts.

6. This admiration came largely in the form of envious comparison, as it was becoming clear that the Coast Guard effort was being hampered by both personnel problems and a lack of organization-wide "ownership" of the effort in Valdez. These points are amplified below. They were much discussed at the 1989 Coast Guard G-MER Debriefing Conference referred to in several places in the main body of this report.

costs of all parties, including Exxon, was granted to the FOSC. This served to speed the winding down of the response and the transition to the restoration program which followed. Because this expansion of Coast Guard control came in the context of a negotiated agreement allowing Exxon to “close the books” on the response however, it is difficult to use this experience as the basis for estimating the value to future FOSCs of the “directing authority” granted by OPA 1990.

Although approximately \$35 million was spent on the 1991 response effort, a large sum by the standard of most oil spill responses, total expenditures on the *Exxon Valdez* response in 1989 are said to have run as high as tens of millions of dollars *per week*.

## RECOMMENDATIONS

It is difficult to generalize from the experience of the *Exxon Valdez* response to the broader question of when it is advisable to “federalize” a response, fully or partially, in spite of the willingness and capability of a responsible party to conduct a cleanup. Not only has OPA 1990 fundamentally changed the nature of the relationship between future spillers and their overseers, but much that bears on the question from the *Exxon Valdez* experience is situation-specific, and in our analysis of it, after-the-fact. What is clear from the *Exxon Valdez* case is that the creation, in order to manage the response, of an ongoing and close relationship with a corporate entity which many saw as a villain left the Coast Guard vulnerable to accusations of complicity and bias. From the Coast Guard’s point of view however, keeping Exxon in the response, even at the possible cost of having to exert heroic efforts to do so, meant that a much more effective cleanup was going to be conducted than would otherwise have occurred.

Future non-federalized spills of national significance will likely engender and require similar relationships among senior officials, both on scene and in Washington, D.C. The roles that state and other federal agency authorities will then play in the response need to be considered carefully as these relationships evolve. The leadership dynamics of future responses may prove to be even more complex if such newly created private organizations as the Marine Spill Response Corporation (MSRC) become heavily involved in response efforts. The mechanisms provided in OPA 1990 to improve the coordination of response efforts among the Coast Guard, the states, and private interests responsible for handling oil at sea (or for responding in the event of accidents), should be utilized to their fullest to assure that the expectations of all parties are mutually understood ahead of time.

## DEVELOPMENT OF THE FOSC’S RESPONSE ORGANIZATION

### FINDINGS

1. Timely activation of the National Contingency Plan by Commander McCall, Chief of MSO Valdez, permitted such critical response actions as efforts to lighten the stricken vessel to get underway as quickly as possible, but the limits of the NCP to

support the level of response that proved necessary were likewise very quickly reached.

2. White House involvement in the response effort brought a flag officer to the FOSC position, direct oversight by both the Coast Guard commandant and the secretary of transportation, and significant U.S. Department of Defense (DOD) involvement in a supporting role. While all proved essential to establishing both actual and perceived control over the response, they did so by taking the response organization into territory well beyond the organizational models envisioned by the NCP, and the NCP got "lost" in the process.
3. The early self-designation of a second FOSC for western Alaska, while technically in accord with the NCP, resulted in problems of decentralization for the Coast Guard which were not resolved until Vice Admiral Robbins assumed FOSC responsibility for western Alaska in 1989.

In each of the three western Alaskan centers where local response organizations had come into existence on their own, weak or inconsistent links in the largely inherited communications channels between the FOSC and western Alaskans were a difficulty which meant that considerable high level attention was necessary to keep western Alaskans "on board."<sup>7</sup>

4. The late-April 1989 reorganization of the response effort by Vice Admiral Robbins reflected the need for an organization whose primary attention could be focused in a sustained way on shoreline cleanup over a vast area. The *de facto* and largely informal organization that had sprung into existence almost spontaneously was formalized, giving a voice in cleanup decision making to organizations, both governmental and non-governmental, whose authority relationships to the FOSC and stakes in the cleanup's outcome varied widely. The result was that efforts to achieve consensus through the interagency shoreline cleanup committees (ISCCs) were often mired in debate, raising the decision cost for the FOSC. The benefit was that this provided a useful forum for the airing of concerns and consensus-building among the participants.
5. The assumption of the ISCC's advisory role by the Technical Advisory Group (TAG) in 1990 increased the efficiency of shoreline decision making, but at the cost that the seeming disenfranchisement of those not directly represented on TAG contributed to the increased political tensions that marked the 1990 response.

The state's TAG representative, the Alaska Department of Environmental Conservation (ADEC), found itself in the conflicted position of having to "stay with" the federally directed cleanup while insulated from pressures to act also on behalf of sometimes parochial state interests.

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7. These difficulties are discussed in several places in the shoreline cleanup chapters (chapters 6-12). The genesis of the western Alaska organization is discussed in chapter 4, "Evolution of the FOSC's Response Organization."

Many important cleanup concerns, such as subsistence issues and the cleanup of oiled anadromous streams, fell into areas which, under state law, found authority vested in agencies not members of TAG or the Regional Response Team (e.g., the Alaska Department of Fish and Game).

## RECOMMENDATIONS

The common theme of the organizational problems described above is the difficulty of developing, under the conditions of extreme emergency that mark a spill of national significance, an organization which is both politically attuned at the relevant governmental levels (which were local through national in the *Exxon Valdez* response) and operationally efficient for the task at hand. Failing to find an effective model immediately, frequent adjustments were necessary. Flexibility in organizational design is likely a necessity in any case as changing circumstances inevitably make readjustment necessary.

Contingency planning, done in cooperation with state and regional officials, is likely the best way to anticipate the political realities which need to be taken into account while developing a response organization for a spill of national significance. Participation by the Coast Guard in the area committees created by the Oil Pollution Act of 1990, facilitated through memoranda of agreement now being negotiated between Coast Guard districts and the states, should do much to help future FOSCs anticipate the many organizational realities that were not anticipated in the *Exxon Valdez* response.

As for specific organizational elements adopted or discarded by the FOSCs as the response unfolded, it is not possible to make rigid declarations about their viability for future responses. The TAG approach to shoreline cleanup decision making could not likely have been imposed on the response effort in 1989 without the greatest of difficulties, and it is hard to see how continuation of the ISCC model into 1990, absent mutually agreed broad standards or guidelines, could have served the cause of efficiency in decision making.

For spills affecting areas as geographically distinct and widely separated as did the *Exxon Valdez* spill, remotely located organizational elements may well prove to be a necessity. Coast Guard internal organizational problems notwithstanding, the downside for future FOSCs is the need to accept the inconsistency in decision making across regions, reflective of differences in local concerns and preferences, likely to result.

## THE FOSC AND THE ALASKA REGIONAL RESPONSE TEAM

### FINDINGS

1. The Alaska Regional Response Team, though providing valuable assistance to the FOSC in several ways, was not constituted in a way that served well the interests of a response of the scale, complexity, and contentiousness of the *Exxon*



*Valdez* response. Much of its traditional function was supplanted by such ad hoc groups as the R&D Committee and the Prince William Sound ISCC.

Federal interests were over-represented, interests were often parochial, and many agencies had Regional Response Team (RRT) roles that were largely superfluous, given other statutory authority. The RRT could be slow and deliberative, opting for testing rather than final action, when quick decisions were needed.<sup>8</sup> Moreover, such dispute resolution mechanisms as were available through the RRT proved ineffective.<sup>9</sup> Agencies with authority or expertise in important but unfamiliar areas affected by the spill (e.g., cultural resources and subsistence needs) were not represented on the RRT.

## RECOMMENDATIONS

Capt. Bodron, RRT co-chair, felt that emergency suspension of some or all of the approval powers normally accorded state representatives might be necessary to "fix" the Alaska RRT's inability to reach decision in several critical areas.<sup>10</sup> Since the problems most acutely felt involved exercise of parallel state statutory authority, longer-term solutions are likely best sought in the details of area-specific contingency planning. Part of the RRT's problem is in the structure of its mandate; the NCP has a built-in bias for the use of mechanical oil removal methods and against chemicals and burning. Also, the merits of individual techniques are considered in isolation when the full suite of available tools should be under consideration simultaneously. The question contingency and response planners have to address is: What is the best mix of the available techniques to employ, given environmental conditions, and the logistical and natural resource constraints which limit each method's use?

With a spill of national significance involving elevation of the FOSC role to the flag officer level, the case could be made that similar elevation of responsibility should occur within the RRT agencies (possibly with scope limited to dealings in such key areas as waste management and chemical or bioremediation agent use). EPA Administrator William Reilly, for example, was brought into a direct oversight role by President Bush. The National Response Team (NRT), to which the RRTs nominally report, is not an appropriate body to assume the RRT function in such cases. The NRT lacks the specific regional knowledge and expertise to be, for the most part, of assistance to the FOSC. Elevation to the agency administrator or deputy administrator level is, at times, more appropriate and should be accomplished through the involvement of the commandant or the chief, Office of Marine Safety, Security, and

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8. The loss of what little window was available to apply such chemical dispersants as were on hand to oil afloat in Prince William Sound, while tests took place, is symptomatic; the problem was not that dispersants were not used, but that a non-decision outcome was allowed to prevail when conscious choice would have been preferable.

9. The Alaska RRT was unable to expedite waste management permits when member agency ADEC was unwilling to do so. In the protracted debate over the use of shoreline cleaners, other RRT agencies could do little more than stand by as the debate among ADEC, Exxon, and the FOSC took place. The R&D Committee spearheaded the testing that took place.

10. Both Vice Admiral Robbins and Capt. Bodron, Alaska RRT co-chair, saw very clearly the inability of the Alaska RRTs to assist meaningfully the FOSC in these critical areas. See chapter 6, "Shoreline Cleanup in 1989."

Environmental Protection. With a forum such as the RRT, the FOSC needs to deal with agency representatives empowered to make decisions.

Another area which needs attention is dispute resolution. More rapid elevation of disputes and to higher levels of authority than is currently provided for in the NCP and in the contingency plans that existed at the time of the spill, could help make the RRT structure as it exists today more useful to an FOSC dealing with a spill of national significance.<sup>11</sup>

## COMPLYING WITH REGULATORY PROCESSES

### FINDINGS

1. The actions taken by a FOSC often depend fundamentally on permits, approvals, or cooperation of other authorities at the state and federal levels. Under the emergency conditions that prevailed during the early weeks of the *Exxon Valdez* response, the expectation was that necessary permits of a routine nature would be expedited. This did not always occur, however.

While many permit and approval delays were a matter of serving the needs of "environmental due process"—the working through required to resolve legitimate differences in mandate or perspective—others involved little more than bureaucratic delays. The U.S. Customs Service especially did not perceive the nature of the emergency in processing Jones Act waivers which needed to be expedited so foreign skimmers and response vessels could be obtained and deployed as quickly as possible.

### RECOMMENDATIONS

The presidential declaration of emergency on April 6, 1989, essential as it was in facilitating DOD and other involvement in the response, did not in retrospect go deep enough to assure that agencies with secondary but nevertheless vital roles were fully on board. In areas such as vessel operations and procurement and air operations and communications, future FOSCs should have emergency authority to prod other agencies into action when necessary to expedite a response.

## WASTE MANAGEMENT

### FINDINGS

1. The lack of agreed disposal plans for wastes collected during the *Exxon Valdez* response created logistical problems for both floating oil and shoreline cleanup operations. While the state had agreed to provide disposal sites under contingency plans, it had not done so, and did not expedite necessary permits for the incinerator barges that Exxon proposed in lieu of land disposal. The FOSC had no authority to

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11. The dispute resolution procedures that currently exist in the NCP are discussed in chapter 20, "Response Management Authority."

impose a solution, and the RRT was unable to assist given the state's statutory authority for waste management.

As a result, massive quantities of oily debris were shipped to a hazardous waste disposal facility in Oregon even though the recovered oily debris did not meet the hazardous waste classification criteria of CERCLA.

#### RECOMMENDATIONS

Waste management planning must be part of contingency planning, and waste management agreements must be part of any negotiations that might take place between state and federal authorities on the cleanup of spills of national significance (see above). In situations where there is failure by state or local authorities to implement previously agreed upon waste management planning, and where, in the midst of a response to a spill of national significance, a mutually acceptable waste management accord cannot be reached in a reasonable amount of time, it would be highly desirable for the FOSC to have emergency powers to implement a federal plan. Unlike the Clean Water Act, CERCLA requires that treatment and disposal options be in place before removal actions can begin.

#### RESPONSE TECHNOLOGY DEVELOPMENT

##### FINDINGS

1. A number of successful response technologies were developed (or refined significantly) over the course of the *Exxon Valdez* response. These ranged from the "omni-booms" and "maxi-barges" that assisted shoreline cleanup operations to the bioremediation agents for which much-refined application protocols, and greatly expanded use, was developed. While true "magic bullet" technologies probably did not emerge, the *Exxon Valdez* spill nevertheless had a significant technology-forcing effect.<sup>12</sup>
2. The technology "success stories" that did emerge appear to owe their existence to the combination of the long, multiseasonal duration of the response and Exxon's generally unstinting willingness to develop or improve technologies.

Active public agency support, or at the minimum, lack of active agency opposition, was also a significant factor, perhaps demonstrated most graphically in the different outcomes of Corexit testing (which never led to approval) and bioremediation testing (which served for the most part either to define more precisely the conditions of use or to expand the role that the technology played).

The extended duration of the response made the nature of needs clearer and increased the chances that technologies which required multimonth

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12. Bioremediation would likely emerge as the closest thing to a true breakthrough response technology in a polling of response managers, though its efficacy in comparison to natural oil degradation continues to be debated.

lag times for their development would still find substantial use. Exxon brought not only willingness to cooperate to the response, but also advanced R&D capabilities, a technology-oriented management, and an "open" checkbook.

3. While the testing of existing or proposed new technologies was built into the response from the beginning, the Interagency R&D Committee and the Prince William Sound ISCC came to play especially crucial roles in response technology development.<sup>13</sup> The state played multiple, and sometimes inconsistent, roles in the response's R&D component, participating enthusiastically in the joint bioremediation monitoring program on the one hand, but complaining at other times that the response had turned into a laboratory for experimentation when efforts should have been focused on cleanup.<sup>14</sup>
4. Testing and experimentation did not always serve well the purposes at which they were ostensibly aimed. At worst, recommending a series of tests became a way to avoid making hard decisions, or to prolong the uncertainties being faced by other parties for political advantage.

Some researchers appeared to have trouble separating that which served their own research agendas from that which best served the interests of the response, and some science advisors appear to have failed to recognize that, in the face of intense political conflict, they were themselves becoming hostages to larger political forces.

5. Although subject still to considerable debate, one of the most surprising messages to emerge from the monitoring and research components of the response was the "anti-technology," "less is more" conclusion that the NOAA scientific support coordinators (SSCs) reached on the overall approach that was taken to the shoreline cleanup.

As NOAA researchers saw it, comparable future spills should see much less intensive efforts at oil removal than occurred in the *Exxon Valdez* response, particularly during 1989. This point speaks directly to the removal completeness criteria in the Coast Guard's Marine Safety Manual, but also challenged directly the beliefs of many state agency personnel. As several observers have noted, shoreline cleanup is a political process.<sup>15</sup>

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13. The two committees, which had considerable membership overlap, developed original test protocols and reviewed and made recommendations to the FOSC on test plans developed by third parties. They had great influence on the FOSC.

14. A. Viteri and E. Piper, "Lessons and Future Needs: The T/V Exxon Valdez Oil Spill Response," Exxon Valdez Oil Spill Response Center (ADEC), Mar. 1992.

15. The period of transition between 1989 and 1990 shoreline cleanup operations saw especially contentious debate over this point, and considerable efforts by NOAA to "sell" its basic message. See chapter 6, "Shoreline Cleanup in 1989," and chapter 7, "Shoreline Cleanup in 1990."

## RECOMMENDATIONS

A cleanup of the magnitude and complexity of the *Exxon Valdez* response must rely heavily on testing and experimentation to define the situation-specific parameters of use for the technologies that will be employed. In addition, the response community can ill-afford to ignore the opportunities for developing new response methods which are presented, as these can lead to significant learning and new technological breakthroughs.

The work of the R&D Committee and its affiliates in 1989 and 1990 kept a strong focus on these two points throughout the response, serving as an important forum for consensus building on both the appropriate roles of individual response technologies and on the overall direction of the shoreline cleanup. A similar organization, with strong NOAA involvement and multi-agency membership, should be part of the larger response organization for all spills of national significance.

By the same token, a number of factors conspired to limit the effectiveness of the science-based activities that supported the response. Political conflict reduced the utility of some scientific inputs,<sup>16</sup> and the constraints imposed by conditions in the field, or by what agencies were willing to approve in the name of experimentation in the midst of an oil spill response, placed limits on what could be learned from field testing.<sup>17</sup> As the experience of the *Exxon Valdez* response demonstrates, none of these factors may be as apparent to those "caught in the middle" as events unfold from day to day as they are in hindsight or when viewed from afar.

Consideration should be given to providing an additional layer of oversight beyond that which is provided by on scene science and technology advisors, through such organizations as the National Research Council (NRC). The scientific work being directed at especially salient technical questions (for example, the efficacy of bioremediation) could be peer reviewed by acknowledged experts far removed from the response itself.<sup>18</sup> Alternatively, a standing panel of scientific and technical experts, convened by the NRC or some other neutral organization, could provide ongoing "real time" advice and technical review to both NOAA and the FOSC.<sup>19</sup>

Should the Coast Guard wish to adopt as a matter of policy the kind of cost-risk-benefit oil removal criteria that are implied by NOAA's "less is more" advice, much public education work is likely required, well in advance of the day when massive deployment of cleanup crews to the field is again required. The "marketing" of an explicit cost-risk-benefit approach to oil removal in future spills is likely best

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16. This appears to have been the case with the "net environmental benefit analysis" that was done to evaluate the rock washer, for example. See chapter 12, "Other Shoreline Cleanup Issues."

17. Such factors appear to have been especially significant in the fate of the shoreline cleaner Corexit 9580. See chapter 9, "Chemical Shoreline Cleaners."

18. The peer reviews commissioned by ADEC of Exxon's bioremediation studies, involving well-respected experts at universities and research institutions, produced a number of "eye-opening" findings on the uncertainties associated with demonstrating the efficacy of bioremediation, not apparent in the voluminous reports produced by those closer to the response (see chapter 10, "Bioremediation").

19. The NRC has in recent years convened panels of experts whose function is to provide ongoing, "real time" technical review to the U.S. Department of Energy on its development of cleanup plans for defense wastes at federal nuclear reservations.

approached as a multi-agency effort, involving NOAA, the Coast Guard, EPA, and perhaps the Occupational Safety and Health Administration and the Agency for Toxic Substances and Disease Registry.<sup>20</sup>

The political nature of shoreline cleanup may still argue however for negotiation approaches to establishing cleanup criteria (see above), and risk-based strategies that the Coast Guard might adopt need to be flexible enough to permit negotiations to be pursued when found warranted.

## SHORELINE CLEANUP PLANNING

### FINDINGS

1. The extended, multi-year effort to clean oiled shorelines achieved extremely high levels of efficiency and coordination despite the great political strife that attended much of it. While the planning, coordination, and data collection efforts that supported the shoreline cleanup were important components of the successes that were achieved, the Coast Guard often found itself balancing the competing and sometimes conflicting interests of the state and Exxon.
2. While a highly efficient data distribution system was developed by the Coast Guard to support shoreline cleanup decision making, the contentiousness of the shoreline cleanup occasionally resulted in various parties introducing "new" information into the equation. This tended to negate the intent of the data distribution system to provide all parties in the decision-making process equal information.

Both the state and Exxon made frequent visits to shorelines to help formulate and buttress the positions they would take to TAG. Coast Guard representatives at TAG meetings often felt unprepared as a result, put into a position of having to react on the basis of incomplete information to new "facts" brought to meetings. The Coast Guard found itself increasingly having to engage in the same tactics to avoid becoming superfluous to the argument about what to do on the shorelines.

3. The battle to control information was intense in both 1989 and 1990. In 1989, when ADEC and Exxon vied constantly with different data on the extent of shoreline oiling and the progress being made, the Coast Guard's ability to direct the deployment of response forces was considerably enhanced when it developed, in mid-year and through the NOAA Computer-Aided Management of Emergency Operations (CAMEO™) database system, its own database on effort expended and required as the cleanup continued.<sup>21</sup>

The ability to demonstrate ownership of "hard" information proved to be especially crucial in dealings with the news media. Data which displayed

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20. The EPA has over the past decade become the acknowledged leader among federal agencies in developing and implementing risk-based decision making approaches.

21. This is the "clydes" system of measurement developed by the Coast Guard and discussed in chapter 24, "Information Management."

progress made to date helped Exxon implant, through media briefings, stories focused on favorable “actuarial” details rather than on the themes of environmental calamity and “hidden” damage emphasized by the state. The Coast Guard initially lacked a proactive media relations strategy, but learned to use its own data to demonstrate through the news media the degree of control it had gained over the response.

## RECOMMENDATIONS

Despite the limitations imposed by the political realities of the *Exxon Valdez* response, the significant refinements in shoreline operations planning, coordination, and data management that occurred over the course of the *Exxon Valdez* response need to remain in institutional memory to inform those who conduct future cleanup operations on spills of national significance. Continued close partnership between the Coast Guard and NOAA, whose role was instrumental to the development of many shoreline cleanup planning system and data handling details, will do much to assure that this will occur.<sup>22</sup>

The training that occurs in drills can also contribute to maintaining knowledge vital to dealing with the details of cleanup planning and management. Officers in positions of command have to believe, as Admirals Robbins and Ciancaglini did, in the importance of developing efficient data management and distribution systems early in the life of a response, and in maintaining them throughout. The available evidence suggests that high-level officers in the “M” program are adequately versed in the importance of these functions. Training within the Coast Guard ranks can nevertheless serve to increase the extent to which the importance attached to good data management practices is shared throughout the organization.

Although political forces can serve to diminish the ability of data and information to resolve disputes, the importance of gaining independence from data supplied by warring factions cannot be overestimated in a contested oil spill response. Systems like CAMEO can take on symbolic importance beyond their objective utility in informing the cleanup planning process. The Coast Guard needs a plan for data development and handling in the event of future spills of national significance that avoids unrealistic assumptions about the virtues of simple stewardship over data and information.

## LOCAL COMMUNITIES, AND CULTURAL AND NATURAL RESOURCE CONSTRAINTS

### FINDINGS

1. Alaskans pride themselves on their uniqueness, and much that was unique, or at least unusual, in the areas affected by the spill caught response managers less than fully prepared. In retrospect, it should not have been surprising that residents of communities like Cordova and the Native village of Chenega Bay, which were

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22. Many elements of the shoreline segmentation system developed for the *Exxon Valdez* response have, through NOAA, already seen application to other spills, such as the 1991 *Tenyo Maru* spill, which affected shorelines on the Olympic Peninsula of Washington State.

highly dependent on the local resource base for their well-being, had extremely emotional reactions to the spill, developing in some cases strong antipathies to those in positions of authority who they associated with the problems the spill had brought.

Coast Guard officials were taken by surprise by the urgency which local fishermen, who organized their own efforts to protect hatcheries in the path of the spill, attached to the protection of fishery resources. The strong opposition of fishermen to the use of chemical dispersants on floating oil appears to have played a significant role in shaping ADEC's skepticism about dispersant use.

Subsistence-use questions, especially those affecting Native communities, took on a complexities that proved especially difficult to deal with by organizations which, like the Coast Guard, were much more attuned to seeking advice from natural scientists than they were in utilizing the knowledge of social scientists. The fears of Native communities for harm to natural resources were often not separable from fears that social stability would crumble should the access to natural resources that they had long enjoyed be lost.

An unanticipated organizational problem was that the state agency with the greatest expertise on questions of subsistence, the Alaska Department of Fish and Game (ADF&G), was not represented on the RRT. Moreover, because data on damage to natural resources important to subsistence use was being very closely held for litigation purposes, the FOSC found it necessary to undertake his own subsistence study, coordinated by NOAA, intended to calm fears about threats to subsistence harvest through broad dissemination of its findings.<sup>23</sup>

2. The *Exxon Valdez* spill, affecting as it did a number of small, isolated communities with strong traditions of independence, brought a host of social problems with which neither the responding agencies nor the communities themselves were very well equipped to deal. These ranged from saturation of the local infrastructure (especially in the areas of sewage treatment and housing) to such social ills as increased crime, higher incidence of alcohol and drug use, and increased mental health problems. Such problems were not only "bigger than the spill," but may have outlasted it as well.<sup>24</sup>
3. The active participation in the shoreline cleanup of volunteer organizations, particularly during the winter when Exxon's operations were suspended, proved problematic for the FOSC. Not only were there safety and liability concerns, but there were fears, widely shared among resource agencies and Native communities,

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23. The origins of what came to be known as the NOAA subsistence study are discussed in chapter 18, "Community Concerns," as are other issues of community impact associated with the spill.

24. At the time of this writing a social scientist whose studies in Cordova and other communities have suggested considerable ongoing emotional stress as a result of the spill was having his work challenged by Exxon.



that poorly supervised crews of volunteers might destabilize shorelines through improper application of the "type A" manual cleanup procedures, interfere with wildlife, or damage cultural resources.

4. The natural landscape proved to be the source of uncommonly many and complex resource constraints, both environmental and cultural, with which response managers had to contend as the task of shoreline cleanup got underway. The presence of so many environmental constraints was a primary motivation for the direction that Vice Adm. Robbins's late-April reorganization of the cleanup took, defining as it did a major role for the interagency shoreline cleanup committees.

The difficulties presented by the presence in the affected area of populations of marine mammals and birds, anadromous fish streams, nesting bald eagles and other wildlife resources, while fairly routinely encountered in oil spill responses, have seldom been encountered with such intensity and frequency as in the *Exxon Valdez* response. The initial job of the Prince William Sound ISCC was almost exclusively that of dealing with the problem of devising a shoreline cleanup plan that could work around the many resource values which had to be protected as the cleanup went forward.

Less familiar were the problems posed by the presence of cultural artifacts throughout the response area. Not only did important cultural sites in the vicinity of oiled shorelines have to be protected from discovery or depredation, but sometimes oiled shorelines were strewn with the stone artifacts of the region's earliest inhabitants.<sup>25</sup>

5. The NOAA scientific support coordinator (SSC) was heavily relied upon by the FOSC for help in dealing with the resource protection questions that arose as the cleanup progressed. NOAA's ability to assist the FOSC on resolving resource protection problems was limited, however, for both practical and political reasons.<sup>26</sup> When other resource agencies took highly proprietary interests and aggressive postures in the name of protecting resources under their jurisdictions, the FOSC frequently found himself faced with difficult-to-meet demands which required political rather than science-based solutions.

Agency representatives took their cases directly to the FOSC or pursued them through whatever channels they felt were most likely to bear fruit. The superintendent of the Kenai Fjords National Park spearheaded the local organizing efforts that led to the creation of the Seward Multi-Agency Advisory Committee (MAC) and Resource MAC, and was highly critical of Exxon and the Coast Guard on an array of issues. One ADF&G spokesman

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25. These difficulties are well illustrated in the discussion of the cleanup of the site known as SEL-188 on the Kenai Peninsula, discussed in chapter 11, "Cultural Resource Constraints."

26. On the practical side, NOAA lacked the detailed local knowledge and highly particular expertise that was to be found in the state and federal agencies whose resource protection missions were much more specific and highly focused. NOAA had no expertise in the area of cultural resource protection, an issue whose importance brought a state historic preservation officer into a prominent role in a shoreline cleanup for the first time.

remained an unrelenting critic of anadromous stream cleanup and protection policies to virtually the last day of the cleanup in 1992. U.S. Fish and Wildlife Service (FWS) representatives threatened to serve notices of violation on both Exxon and the Coast Guard for alleged eagle nest constraint infractions, and U.S. National Park Service (NPS) officials did serve such a notice on Exxon for conducting cleanup operations on shorelines of the Kenai Fjords National Park without an NPS monitor being present.<sup>27</sup>

## RECOMMENDATIONS

The political aspects of these problems are not easily remedied in a high stakes oil spill response like the *Exxon Valdez*. The negotiation of agency-by-agency Memoranda of Agreement to deal with problems of resource protection is problematic, as agreeing to fully respect the constraints imposed by one agency risks running afoul of constraints imposed by others.<sup>28</sup> NOAA's strengths in planning and coordination do not guarantee that NOAA will be able to help when problems of implementation arise.

The Coast Guard should consider augmenting the staffs of FOSCs in command of response operations to major spills with knowledgeable ombudsmen who would be assigned to look after natural and cultural resource issues, serving as primary resource agency contacts in their respective areas. This is particularly important for cultural resource issues, as other federal agencies with cultural resource protection responsibilities are habitually underfunded and understaffed, and lack experience with oil spill response.

Contingency planning for spills of national significance might also focus on fostering more coordination among resource agencies with similar area responsibilities than occurred in the *Exxon Valdez* response. The several U.S. Department of the Interior (DOI) agencies, for instance, did not consistently operate through the offices of their own regional director in bringing issues to the attention of the FOSC. Mid-level individuals in many of these resource agencies often appeared to the Coast Guard to be the *de facto* policy makers.

The Coast Guard should also work on ways to improve the sensitivity to natural and cultural resource issues of the Coast Guard personnel who monitor or otherwise assist with shoreline operations. While it would be an overstatement to say there was a pattern of insensitivity by Coast Guard field personnel to the representatives and concerns of the resource agencies, sufficient concern is expressed in the record to warrant systematic attention to this issue in Coast Guard training programs. Coast Guard corpsmen specifically trained to deal with matters of natural and cultural resource protection might be assigned to the Coast Guard strike teams. Alternatively, NOAA might be asked to assign specialists to the Coast Guard strike teams, much as it

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27. P. Gates (DOI), letter to Rear Adm. D. E. Ciancaglini, 17 July 1989, no. W1702, FOSC Exxon Valdez Archive.

28. An ADF&G spokesman found many of the eagle nest constraints imposed by FWS to be inimical to the cleanup of anadromous fish streams (see chapter 12, "Other Shoreline Cleanup Issues").

now assigns resource coordinators to EPA regions to assist in resource protection questions associated with hazardous waste cleanups.

Finally, it is clear that more needs to be done to involve meaningfully locals like fishermen whose local knowledge, expertise, and commitment to cleanup is potentially an asset to federal agency responders. While the future involvement of fishermen's groups in oil spill response is addressed in OPA 1990, clearer guidelines are necessary so that other volunteer efforts are channeled into the areas where they are most helpful, and discouraged when they are not.

## FINANCING FEDERAL INVOLVEMENT IN THE RESPONSE

### FINDINGS

1. Federal agency costs associated with the response, while running at only about 10 percent of the costs incurred by Exxon, were nevertheless substantial in comparison to the federal funds available to support them. Although fully reimbursable by Exxon, there was ironically no practical way to finance necessary agency response work until a "progress payment" arrangement was worked out with the company. As it developed, there were no existing federal finance models or plans capable of handling the fiscal requirements of an event like the *Exxon Valdez* spill.

Federal agency response costs during 1989 totaled \$110 million, while the 311(k) account available to reimburse them contained just \$6.7 million when the spill occurred. Already appropriated and earmarked funds were by law unavailable, and a special appropriations request to Congress on behalf of the Coast Guard was judged "too risky" by the commandant's office, in light of other requests the Coast Guard was making to the U.S. Congress.

2. While the FOSC has, under the NCP, authority to certify agency costs incurred for oil spill response, as a practical matter cost control proved very difficult to achieve. Some federal agencies were very successful at making "side deals" with Exxon, thereby bypassing the FOSC. Some agency response cost claims disapproved by the FOSC appear to have been carried over to the settlement agreement where they were successfully claimed as restoration costs.

While by no means a panacea, the response cost pre-approval authority given the FOSC by the settlement agreement in 1991 appears to have resulted in a more consistent rationale being applied to decisions on response-related studies and other activities than existed previously. In at least one case (the NOAA subsistence study), the FOSC chose to continue a study as a legitimate response element and service to the Native Alaskan communities, after the sponsoring agency had decided to drop it as no longer justifiable in the name of response.

3. Property accountability was very poor during 1989. There appears to be an inherent tradeoff between property accountability and the flexibility necessary to mount a major oil spill response.
4. Considerable cost savings were made possible by shared services agreements, with Exxon as the basic service provider. However, such arrangements were not politically feasible until the prospects of a settlement agreement were on the horizon.

#### RECOMMENDATIONS

As in many other areas of the response, the lack of a fully developed plan prior to the spill caused problems on nearly every front on which money exchanged hands. Existing federal procurement procedures were so cumbersome that at times the local hardware store balked at extending lines of credit to the Coast Guard. Existing Coast Guard accounting procedures, operating on standard work stations, could not handle the volume and frequency of financial transactions, a problem only solved when someone thought of a microcomputer and a spreadsheet application.

The vastly greater level of backup funding support made available through the passage of OPA 1990 should do much to guarantee that the fiscal problems that bedeviled the *Exxon Valdez* response do not recur during future spills of national significance. Provisions for expedited procurement authority should also help considerably, though federal procurement, with fundamentally different standards of accountability than exist in the private sector, may never achieve the levels of efficiency achieved by Exxon. Because the FOSC's accounting staff worked very closely with the National Pollution Fund Center (NPFC) to refine accounting procedures over the course of the response, and because the hand of the NPFC has been strengthened considerably through the passage of OPA 1990, it is likely that many of the accounting lessons learned over the course of the *Exxon Valdez* response have already found their way into necessary procedural modifications.

#### PUBLIC AFFAIRS, PROTOCOL, AND MEDIA RELATIONS

##### FINDINGS

1. Lacking a coherent public affairs and media relations plan, the Coast Guard frequently found itself "caught in the middle," unexpectedly put on the spot to either confirm or deny stories released by Exxon, the state, or other parties. Confusing or contradictory information from the Coast Guard tended to undermine confidence in the entire Coast Guard effort, contributing greatly in 1989 to the popular view that "no one was in charge" of the response. With the heightening of tensions between the Coast Guard and the state that occurred in 1990, frequent news stories casting the Coast Guard leadership in a negative light appeared in the local news media. These found the FOSC frequently embroiled personally in efforts to "set the record straight."

Coast Guard public affairs personnel appear to have viewed their task as primarily one of systematic documentation of events and conveyance of unbiased information to the news media. Unfortunately, with the other principal parties engaged in aggressive efforts to "sell" their versions of events through intensive media campaigns, the Coast Guard's purely reactive strategy appears to have worked against the interest of creating a favorable image for the Coast Guard's efforts.

2. The importance of the public affairs function appears to have been considerably underrated. The Coast Guard's public affairs program had been habitually underfunded and understaffed, with the result was that during 1989, there was a shortage of qualified public affairs personnel. Frequent personnel turnover made it impossible for the Coast Guard to implement the "single spokesperson" approach to media relations that many other organizations utilize successfully to build up a relationship of trust with the news media.
3. The *Exxon Valdez* response became host to a large number of protocol visits, particularly during 1989.<sup>29</sup> The problem of facilitating dignitary (VIP) visits in a way that avoided disruption of field operations was never fully resolved in 1989, and many felt that, with the benefits of prior planning, the Coast Guard's VIP program might have been better used to inform opinion makers of the progress and procedures undertaken by the Coast Guard and the other agencies and groups involved in the response.

#### RECOMMENDATIONS

The development of a detailed public relations and protocol plan for spills of national significance seems essential if the Coast Guard is to realize the benefits that can come with sophisticated and proactive public and media relations programs. Adequate budgetary support and better training of public affairs personnel are also necessary. The U.S. Air Force public affairs personnel with whom the Coast Guard interacted through the Joint Task Force, whose operations were vastly better funded and more sophisticated, came to be greatly admired and respected by their Coast Guard counterparts. An example of a proactive and successful media effort is to be found in the media relations program that accompanied "Operation Desert Storm." There a "theme of the day" approach appears to have been used very successfully to create an overall positive image of the DOD effort.

As in other areas however, conflict among the major parties to an oil spill response is capable of undermining even the most sophisticated efforts at public image building. With the threat of litigation between the responsible party, and state and federal governments ever present in a spill of national significance, standard solutions to avoiding the multiple news organizations' "mixed message" syndrome, such as the establishment of a joint media center, may be of limited value. The Coast Guard is in

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29. See figure 21.1 in chapter 21, "Public Affairs and Protocol."

an inherently weak position as its role is inevitably that of the home plate umpire, stuck with the job of calling balls and strikes.

## DEPARTMENT OF DEFENSE SUPPORT

### FINDINGS

1. The logistical support provided by the U.S. Department of Defense, made possible by presidential direction, proved to be of inestimable value in facilitating the rapid growth of the response effort during 1989. While OPA 1990 is having a significant effect in assuring that more oil response equipment is available than was the case in 1989, spills in remote areas that affect large regions are likely to continue to require the kind of logistical support that only DOD can provide.

The DOD supplied skimmers and boom, water heater units for shoreline washing operations, and the berthing vessels that permitted Exxon to deploy thousands of workers into the field during 1989. Equally important, DOD airlifts proved vital to Exxon's efforts to assemble response equipment from around the world.

### RECOMMENDATIONS

The near seamless integration of DOD logistical support into the response was one of the great under-appreciated success stories of the *Exxon Valdez* incident.<sup>30</sup> The lack of familiarity with the needs of oil spill response on the part of Air Force personnel who manned the DOD Joint Task Force seemed to make little difference in their ability to mobilize efficiently and effectively. A most important factor for future response planners is to ensure that new relationships among the Coast Guard, the states, responsible parties, and private response organizations developing as a result of OPA 1990 do not make it more difficult to call upon DOD support when needed.

## THE COAST GUARD PERSONNEL SYSTEM

1. Perhaps the greatest internal organizational difficulty the Coast Guard had in coping with the demands of the response was in trying to calibrate the workings of its personnel procurement system with its personnel needs. Both the filling of billets with qualified personnel, and the retention of personnel once assigned, became major problems. Vast resources went into training newly arriving personnel, processing orders, and providing travel and per diem for individuals traveling thousands of miles to join the response team for a few weeks. In the end, as the response grew into a multi-year effort, the FOSC learned that the way to assure constancy in the ranks was to rely on reservists rather than on active duty personnel.

When the spill occurred in 1989, it found the ranks of the Coast Guard's Marine Safety, Security, and Environmental Protection program seriously

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30. The successful lightering of nearly five times the volume of oil that was spilled from the stranded vessel is another.

understaffed as a result of years of budget cuts. Because sending units were so short of personnel in their own "M" programs, tours of duty were made as short as possible to mollify the home commands, typically only two to three weeks in duration.

Because the issuing of orders sending people to Valdez was so uncoordinated, some billets in Valdez found multiple individuals arriving to fill them while others went unfilled. Moreover, because the spill was viewed internally as the problem of the Coast Guard's "M" program, it became difficult to get trained personnel for specialized tasks like accounting, where training in oil spill response offered no particular advantage, but training in accounting definitely did.

#### RECOMMENDATIONS

It is beyond the scope of this report to provide other than general comments on how the Coast Guard's personnel system might be made more responsive to the needs of future spills of national significance. Two observations do seem in order. First, just as Exxon quickly came to regard its own response efforts as engaging whatever was necessary from the full resources of the corporation, so must the Coast Guard treat future oil spills of national significance as service-wide efforts, particularly in the matter of staffing. Second, maintaining sufficient numbers of adequately trained personnel for the full range of supporting activities that a spill like the *Exxon Valdez* spill requires may be difficult in light of downsizing that is now occurring in the Coast Guard organization. Creative use of intergovernmental personnel loans from organizations like NOAA, the National Park Service, and the U.S. Forest Service, who have capabilities in areas like archaeology and environmental resource protection that the Coast Guard generally lacks, might be one way to overcome the problems that downsizing could create.

#### ENDING THE RESPONSE

1. While the Marine Safety Manual makes it clear that there is a point at which an FOSC should stop treating oiled shorelines, it proved exceedingly difficult to know when that point had been reached, either for particular shorelines or for the overall response effort. On both the question of ending the entire response, and a number of cases where decisions to cease treating particular shorelines were at issue, the question took on political dimensions that effectively took it beyond the realm of purely technical analysis.

As the response wore on beyond the initial cleanup season, efforts were increasingly made to distinguish shoreline "demobilization," implying possible future return for further treatment, from shoreline "sign off," implying that all parties agreed that no more treatment was necessary. The difference was often muddy, and efforts to produce a formal sign off document that could be applied to specific shoreline segments were never carried through to completion.

Had a settlement agreement not been reached late in 1991, it is doubtful that the shoreline cleanup would have ended as cleanly as it finally did in June, 1992. Moreover, the appearance of a likely settlement on the horizon, with the promise of transition to a restoration program, seems to have increased the willingness of the state and some federal resource agencies to agree with "no treatment required" recommendations from TAG.

In the few cases where shoreline oiling proved to be especially resistant to the treatment that could be done, a "workmanlike effort" standard of cleanup completeness appeared to substitute for criteria based on the results obtained.<sup>31</sup> This proved especially problematic for response managers when the shorelines involved were Native lands, and the shoreline workers were the Natives themselves. In the worst of cases, cleanup work which had come to provide a much needed source of income could clearly have been allowed to continue for some time beyond when it was concluded, but with little gain in terms of overall improvement in environmental condition.

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31. The shoreline segment known as LA-20, located at Sleepy Bay on Latouche Island, offers an especially apropos example.



