

INITIAL CRUISE PLANNING INFO

MAPPING SHAKEDOWN CRUISE 03/30-04/03 2009

Points of Contact

<i>Lead POC</i>	<i>Supporting Planning Team Members</i>
Nicola Samuelson, EX	Craig Russell, OER Mashkoor Malik, EX Elaine Stuart, EX Colleen Peters, EX

Goals, Objectives, Activities Description(s)

**Weather dependent

<p>The goal of this shakedown is to assess readiness of EX's suite of mapping sensors including multibeam sonar (MBES), single beam sonar (SBES), sub-bottom profiler (SBP) and ensure integration of mapping sensors with critical ancillary sensors including motion sensors, net apps, bridge DP system etc.</p> <ol style="list-style-type: none"> 1. Assessment of readiness of all the mapping sensors. Identify any shortcoming in suite of hardware and software required for EX mapping operations. Visual inspection (and cleaning of sonar heads) by divers. 2. MBES Patch test: Patch test is conducted to identify any roll, heave, pitch and time offsets between MBES and the motion sensor. The ship is run over small lines (~ 1-4 km) in several configurations to assess these offsets. For detailed description of carrying out patch test refer to the EX SOPs for carrying out patch test. A shallow water patch test will be planned for this initial shake down cruise in water depths < 1000 m. A deeper water patch test will be carried out in the later cruises. Patch test will ensure the ability of the sonar system to collect good bathymetric data and proper integration with ancillary sensors. 3. **MBES bubble sweep down issues: Bubble sweep down was observed during mapping shake down cruise in Sept 09. However, no detailed assessment of bubble sweep down problems was conducted then. Bubble sweep down is usually exacerbated while heading into wind / currents / swell. To assess the effect of direction of wind / swell on the extent of the bubble sweep down 8 lines will be run in different direction, covering all the quadrants. These lines will be run in comparatively rough weather with high wind speed and swell. This test will preferably be carried out in medium water depth (> 500 m). 4. SBP open water test: Sub bottom profiler (SBP) was accepted in Nov 2009 however the SBP has not been tested in open water. Concurrent operation of MBES/SBES and SBP will test for (a) Correct picking of bottom by SBP (b) any interference between SBP and MBES/SBES. SBP performance testing will best be carried out if SBP is tested over different types of the seafloor (e.g. hard and soft). This test can be carried out in conjunction with MBES tests and no separate time needs to be allocated for SBP tests. Proper logging of data in appropriate formats and data processing using Sonar wiz will be attempted. 5. Minimum operating depths for mapping sensors: An attempt to evaluate the minimum operating depth of EM 302 , EA 600 and SBP will be made during this cruise. These tests will be conducted in as shallow water as possible ensuring navigation safety. Close cooperation with bridge will be needed to find suitable sites. 6. Outstanding issues from Sept 09: During this cruise outstanding issues from Sept 09 shake down cruise will also be addressed including (a) Calibration of TSG with CTD (b) Ensure receipt of continuous feed of sound speed from TSG to MBES (c) Transfer of grids and line plan from SIS and Bridge DP system (d) Integration of SIS and DP system for automatic stop and start logging (e) Assessment of data storage requirement for MBES with and without water column data logging (f) Completion of outstanding SOPs (g) Completion of System readiness report (h) Further refinement of data processing pipeline for MBES, SBES and SBP.

Participants

<i>Ship</i>	<i>NOAA Science</i>	<i>Other</i>
Lt Nicola Samuelson Elaine Stuart Colleen Peters CET Richard Conway ET Don Jones	Craig Russell Mashkooor Malik	

Duration/Schedule

033009	System readiness assessment Sonar head inspection by divers	1 day
033109	Transit to patch test site	1 day
040109	MBES patch test	1 day
040209	MBES bubble sweep test	1 day
040309	Minimum depth evaluation	½ day
	SBP open water test	Concurrent with Multibeam operations
	Other outstanding issues	Concurrent with other mapping activities

Cruise Track Description(s)

Suggested patch test line plan lies in vicinity of Juan De Fuca Strait, WA with approximate position

Minimum depth test site will be selected in consultation with bridge. Proposed sites are

Note: Refer to Figure 1 for map showing these proposed locations are attached as PDF.

Equipment/Systems Needed/Tested

<input checked="" type="checkbox"/> DP	<input type="checkbox"/> Seawater flow-through system
<input type="checkbox"/> A-Frame	<input checked="" type="checkbox"/> TSG
<input type="checkbox"/> Traction Winch	<input type="checkbox"/> Fluorometer
<input checked="" type="checkbox"/> Hydro Winch	<input checked="" type="checkbox"/> CTD (deck unit)
<input type="checkbox"/> ROV Crane	<input checked="" type="checkbox"/> CTD w/o Rosette
<input type="checkbox"/> General Purpose Crane	<input type="checkbox"/> CTD w/ Rosette
<input checked="" type="checkbox"/> EM302	<input type="checkbox"/> SCS Outputs
<input checked="" type="checkbox"/> Deep Water Echo Sounder	<input type="checkbox"/> Hazardous Storage
<input checked="" type="checkbox"/> Sub-bottom Profiler	Describe:
<input type="checkbox"/> VSAT Pipe Mbps # days full pipe	<input checked="" type="checkbox"/> Other(s):
<input type="checkbox"/> Cameras <input type="checkbox"/> Telepresence <input type="checkbox"/> CCTV	Describe All: J-frame
<input type="checkbox"/> ROV	
<input type="checkbox"/> Sled	
<input type="checkbox"/> xBot	

Dependencies (e.g, actions, conditions, equipment, etc)

1. All the required softwares are available and updated [SIS, CARIS, Fledermaus, ARC GIS, Sonar Wiz, Velociwin, Hypack, MapInfo]

Lead Time and Long Lead Time Items (e.g., permits, etc)

Nil

Shore-side support (besides staffing, what other stuff is needed)

Nil

Items to Test

See description of goals of the cruise

Data Management Objectives or Activities

Nil

Outputs

<ol style="list-style-type: none">1. Patch test results2. Minimum operating depths of mapping sensors3. Readiness evaluation of mapping sensors

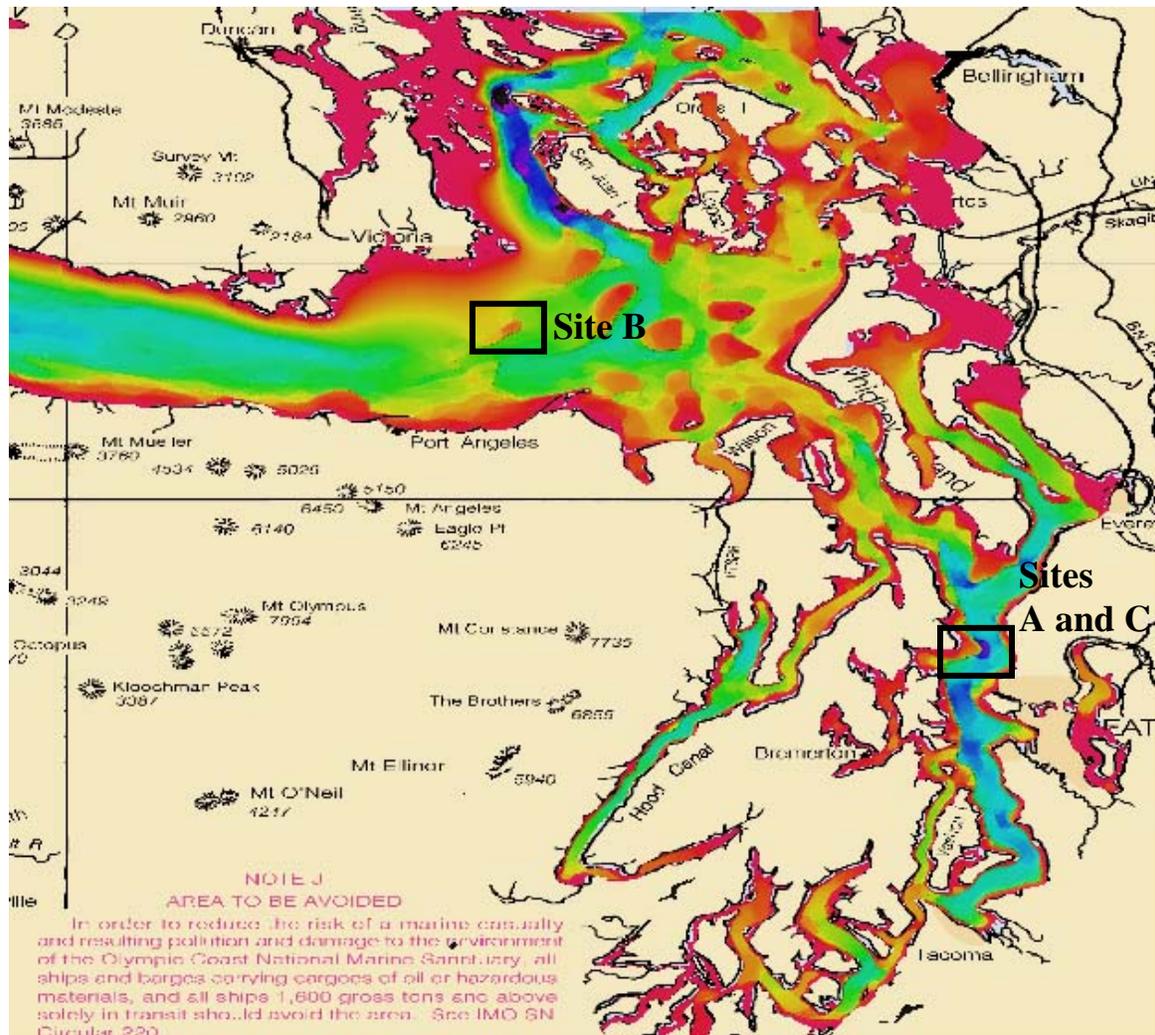
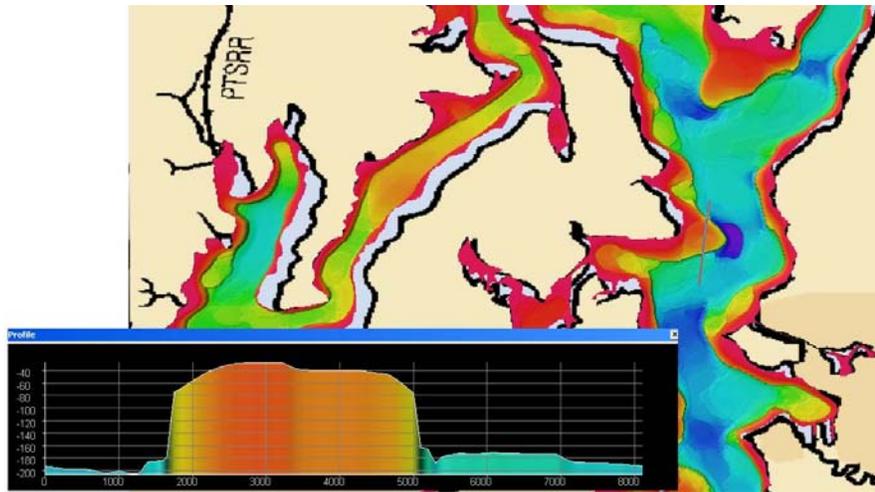
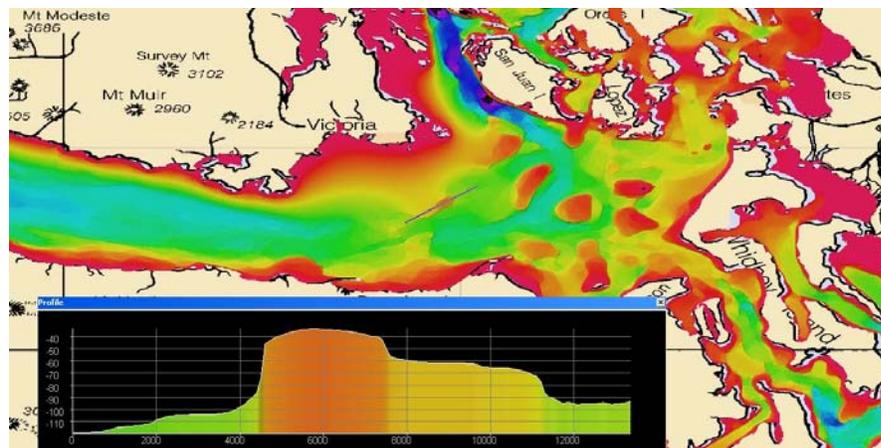


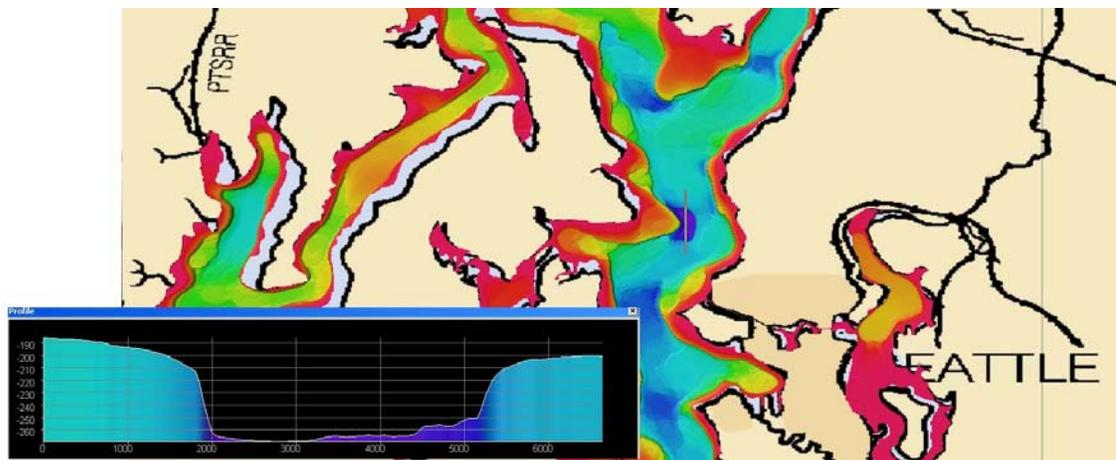
Figure: Proposed patch test site for shallow water patch test is Site C. Proposed sites for shallow water tests are sites A and B. Following figures show these sites in more details with depth profile drawn across features of interest.



A: Proposed shallow water site 1. Minimum depth ~ 40 m.



B: Proposed shallow water site 2. Minimum depth ~ 35 m.



C: Proposed site for shallow water patch test. The sloping seafloor will be used for pitch and timing patch test. Relatively flat seafloor in vicinity of this site will be used for roll patch test.