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School Storm Safety Rules Refined

A team of seven university professors has come up with some potentially lifesaving refinements to the National Weather Service's safety rules for shielding schoolchildren against tornadoes. Their recommendations are based on numerous on-site inspections of schools damaged or destroyed by tornadoes during the past few years.

Their key finding is that the worst effect of a tornado on a schoolbuilding is a savage blast of wind from the portion of the rotating funnel augmented by the tornado's forward speed. Since most tornadoes come from the southwest, this means the extreme blast usually will come from the southwest, and that schoolrooms on upper floors facing south and west usually will be hardest hit, and most dangerous to occupy. The safest places in a school with no basement usually will be interior corridors on the lowest floor that open to the east and north, where the wind force usually will be least.

If the school has a basement, that of course remains the safest place of all.

Previously it had been thought that a possibly greater effect than wind was the explosion of air trapped inside a schoolbuilding when the low-pressure "eye" of the tornado passed overhead, causing all of the walls to fall outward and the roof to blow off. Actually, it seldom happens that way, says the team. In their investigations, walls and windows on south and west sides of schools were most often pushed in, not out, while a north wall sometimes would fall outward, but rarely.

As the accompanying illustration shows, the wind force of a powerful, fast-moving tornado may be 100 miles per hour stronger on the right side than the left.

By combining this knowledge with the fact that 90 percent of all major U.S. tornadoes come from a direction somewhere between south-southwest and west-southwest, school administrators and other institutional officials can select, in advance, the portions of their buildings that are likely to be safest, and those most dangerous, should a large tornado make a direct hit on their building.

(Continued on page 2)

Preliminary DOMES Results Are Reported

Mining ships stripping the Pacific ocean floor of its blanket of manganese nodules will also stir up sediment, disturb such bottom dwellers as sea cucumbers, anemones, and sponges, and perhaps resurrect long-dormant spores. But much more is yet to be learned before the environmental effects of deep ocean mining can be predicted with certainty.

These were among the tentative conclusions of a study in a NOAA project aimed at predicting the probable environmental impact of deep sea manganese nodule mining: the Deep Ocean Mining Environmental Study (DOMES). Project officer for DOMES is John W. Ian of the Environmental Research Laboratories' Pacific Marine Environmental Laboratory in Seattle, Wash. The project is under the general supervision of NOAA's Marine Ecosystem Analysis program, aimed at defining the relationship between man and the marine

(Continued on page 3)

NOAA Marks 15th Anniversary Of TIROS I Weather Satellite

NOAA commemorated fifteen years of weather satellite data and its application to the forecasting and warning of destructive storms this week.

"From a small beginning 15 years ago," said David S. Johnson, Director of the National Environmental Satellite Service, "the Nation has developed a sophisticated and effective operational weather satellite system based upon the accomplishments of the world's first polar-orbiting weather satellite, TIROS 1, launched by NASA from Cape Canaveral on April 1, 1960."

Results from TIROS 1 led to the decision by the U.S. government to create the national operational weather satellite system which permits the detection and continuous surveillance of every disturbance.

Although NOAA still flies satellites based upon TIROS-type capability, Mr. Johnson said, "we have substantially modified and increased the polar orbiting technology to provide on a continuous basis meteorological data to locate storms, especially tropical storms and such phenomena as thunderstorms, frontal systems, fog, ice and snow."

Major storms detected by the satellite system include:

–Tropical Storm JENNIFER, which was far out in the Pacific on October 11, 1969, but curved during the night, accelerated rapidly toward Mexico, and struck the city of Mazatlan the next afternoon. Her changes in course and speed were detected in the morning satellite picture in time to warn Mazatlan of the impeding disaster.

–Other major Eastern Pacific hurricanes in which satellite pictures played the crucial role in enabling weather forecasters to issue timely, accurate warnings were PAULINE (Sonora, Oct. 1968); NAOMI (Mazatlan, Sept. 1968); HELGA (Baja California, Sept. 1966); and BERNICE (Los Angeles, July 1969).

(Continued on page 3)

Townsend Elected To Academy Of Engineering

Dr. John W. Townsend, Jr., NOAA's Associate Administrator, has been elected a member of the National Academy of Engineering. He was honored for his leadership in developing sounding rockets and earth environment satellites and advanced technology environmental studies.

Dr. Townsend

The National Academy of Engineering is a private organization established in 1964 to share in the responsibility given the National Academy of Sciences under its Congressional charter of 1863 to examine questions of science and technology at the request of the federal government; to sponsor engineering programs aimed at

(Continued on page 2)

Island in St. Lawrence River Nominated Estuarine Sanctuary

The Office of Coastal Zone Management is considering a proposal that 1,200 acres on Grindstone Island in the St. Lawrence River near Clayton, N.Y., be designated an estuarine sanctuary, permitting them to be maintained in their natural state for scientific and educational purposes.

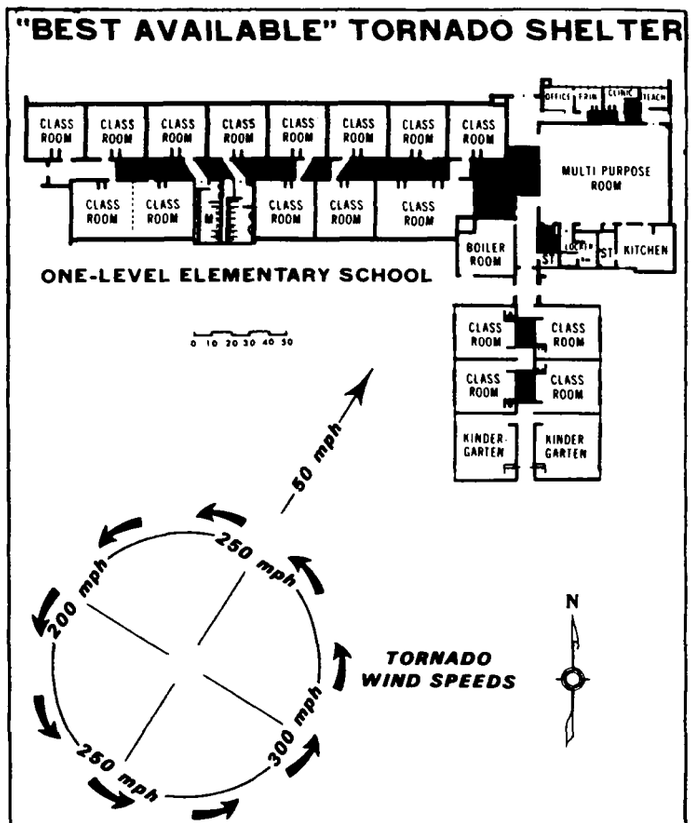
If the proposal is accepted, Federal funds would be made available toward the purchase of the property adjacent to Delaney and McCrea Bays on Grindstone Island. The State of New York would be expected to provide one half of the cost.

The Coastal Zone Management Act of 1972 encourages states to reserve for research and educational uses examples of the various types of estuaries found in the United States and its territories. Delaney and McCrae Bays are ecologically typical of estuaries in eastern Lake Ontario and the St. Lawrence Region, and are considered to be in an undisturbed state; that is, natural and unspoiled by mankind.

Dr. Edward T. LaRoe, OCZM's Estuarine Sanctuaries Coordinator and Coastal Ecologist, said the proposal was submitted by State University of New York's College of Environmental Science and Forestry, which has a research station on Governor's Island, about a mile from the proposed sanctuary.

The sanctuary would be owned by the State university, and operated by the college in cooperation with the New York Department of Environmental Conservation. Recreational hunting, fishing, trapping, boating, etc., of a low intensity would be permitted on a controlled basis.

Team of Professors Refines Tornado Safety Rules for Schools



Blacked-in areas show best-available tornado shelter areas for school population of 508 students and 32 staff, with each person alloted six square feet of shelter space during tornado emergency. Schematic drawing of maxi-tornado shows increase in wind force on right side as a result of tornado travel. The university analysts say that if a large tornado hit this school some persons occupying some of the locations would be injured, but most likely there would be few if any lives lost.

(Continued from page 1)

The professors who did the research for the report are James Abernethy of Lawrence Institute of Technology, Southfield, Mich., project coordinator; Joseph Minor, James McDonald, and Kishor Mehta of Texas Tech University; Uwe Koehler of Ball State University, Indiana; Billy Manning of Auburn University, Alabama; and Thomas Hanson of the University of Detroit. All are either architects or engineers. The report was prepared for the Community Preparedness staff of the Weather Service.

The researchers said the principal effects of the peak tornado winds are, in order of importance;

–the disintegrating pressure against walls, windows and doors;

–the devastating effect of missiles propelled by the wind;

–the collapse of high portions of buildings, such as chimneys, into lower parts which would otherwise suffer little damage; and

–the explosive pressure differential when air pressure inside a building is momentarily higher than outside.

They said schoolbuildings designed to meet usual code requirements seldom fail because of explosive decompression, but usually because of some combination of the other three.

Time and time again they found tornado-devastated schools with south and west walls knocked inward and shattered window glass imbedded in interior walls of south-facing rooms. Windows on north-facing rooms were often intact.

They cautioned that large rooms with free-span roofs are particularly dangerous because the likelihood of roof failure and said that roofs of rooms such as gymnasiums, cafeterias, and auditoriums fail because of aerodynamic "lifting" by winds passing over the roof plus "ballooning" from within caused by inrushing air through openings in an exterior wall.

Also to be avoided are areas with lots of glass, corridors and spaces likely to become "wind tunnels," and areas with load-bearing walls–those where roofs and floors depend on walls for their support.

The "wind tunnel" effect occurs in corridors and spaces in line with the tornado's travel. People caught in such locations should sit, crouch, or lie flat and cover their heads, because glass, gravel, dirt, and debris will actually move horizontally through these tunnels. Interior corridors facing north are usually safest, followed by those facing east, so corridors with openings that face south or west should be avoided. Also to be avoided are doorways that open into south- or west-facing rooms, and if it is necessary to occupy a corridor with a door facing an approaching tornado, people should stay well back from the door.

The report also lists "good features" for tornado shelters, in order of importance, as a place on the lowest floor, under a short-span ceiling, in the interior of the building, in a room with framed construction rather than load-bearing walls. It recommends six square feet per person in the shelter area.

Dr. Townsend Is Elected a Member of the National Academy of Engineering

(Continued from page 1)

meeting national needs; to encourage engineering research; and to recognize distinguished engineers.

Election to the Academy is the highest professional distinction that can be conferred on an American engineer and honors those who have made important contributions to engineering theory and practice or who have demonstrated unusual accomplishments in the pioneering of new and developing fields of technology.

Others in the Commerce Department selected for membership in the Academy this year are Dr. Betsy Ancker-Johnson, Assistant Secretary for Science and Technology, and Dr. F. Karl Willenbrock, Director of the National Bureau of Standards' Institute for Applied Technology.

Included among the 86 new members of the Academy are individuals who have made major contributions to such diverse areas as acoustics, aeronautics, aerospace research and development, applied mathematics, automotive engineering, biomedical engineering, ceramics, chemical and petroleum engineering, civil engineering, coastal and ocean engineering, communications, computer science, earthquake engineering, electrical and electronics engineering, energy utilization, engineering education, materials engineering, mechanical engineering, metallurgical engineering, mining engineering, nuclear engineering, polymeric materials, seismology, soil mechanics, structural engineering, transportation, and water resources.

Dr. Townsend previously served as Deputy Administrator of NOAA's predecessor, the Environmental Science Services Administration. From 1965-1968, he was Deputy Director of the National Aeronautics and Space Administration's Goddard Space Center.

At Goddard he planned, directed, and conducted a broad program of space research. He was responsible for the day-to-day management of most of NASA's scientific and applications satellites, operation of its global tracking and data acquisition network for unmanned satellites, and the manned Gemini and Apollo spacecraft. He directed field groups at Cape Kennedy and the Pacific Missile Range that were responsible for the launching of all NASA Delta, Thor-Agena, Atlas-Agena, and Centaur vehicles, and supervised the Goddard Institute for Space Studies in New York.

Dr. Townsend received the Navy's Meritorious Civilian Service Award in 1957; the NASA Medal for Outstanding Leadership in 1962; the Arthur S. Flemming Award as one of the Ten Outstanding Young Men in the Federal Service in 1963; and the NASA Distinguished Service Medal in 1971.

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NOAA Week reserves the right to make corrections, changes or deletions in submitted copy in conformity with policies of the paper or the Administration.

Catherine S. Cawley, Editor
Anna V. Felter, Art Director

Tuna Producers Enter Voluntary Inspection Program

The Van Camp Seafood Company and Westgate-California Foods, Inc., are the first large producers of canned tuna to enter the Commerce Department's voluntary inspection program, which is administered by the National Marine Fisheries Service.

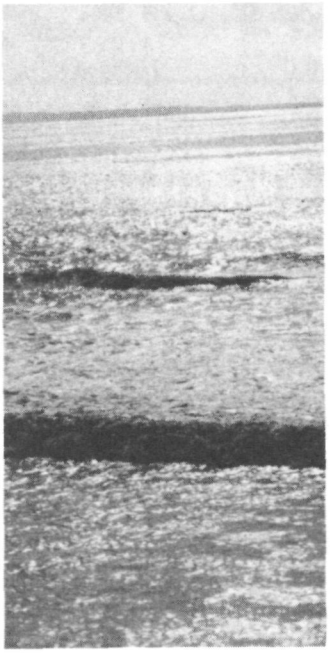
Under the terms of the contract, an NMFS inspector will be in each processing plant, statistically sampling the tuna as it is processed, to be sure that it is wholesome, clean, and meets the Department's high quality standards.

As a result of entering the program, Van Camp and Westgate will be permitted to place the Department's "Packed Under Federal Inspection" (PUFI) mark on their canned tuna.

Van Camp, a subsidiary of Ralston Purina, produces "Chicken of the Sea" tuna, and Westgate produces "Breast O'Chicken" tuna and "Carnation" tuna.

Existence of Alaskan Tidal Bore Is Confirmed

NOAA oceanographers have confirmed the existence of a tidal bore—one of nature's most interesting phenomena, and one which occurs in relatively few localities around the world—in Knik Arm, Alaska, after a preliminary investigation last year revealed no evidence of its presence.

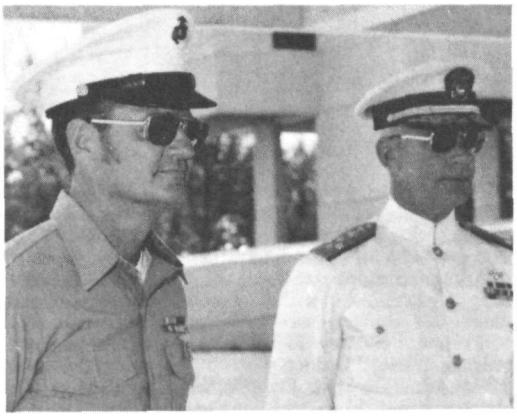


At its worst, a tidal bore is a foaming, churning wall of water advancing upriver from the sea, its force probably accentuated by a lessening in depth and the narrow confines through which it moves. At its weakest, it has the appearance of a small wave or series of waves. One of history's most famous accounts of a bore, written by the Macdeonian Quintus Curtius about 50 A.D., related how Alexander the Great's invincible armada was almost destroyed as it journeyed down the Ganges River in India toward the sea.

Knik Arm is a branch of Upper Cook Inlet on which Anchorage, the state's major seaport and largest city, is located. The investigation was conducted by the NOAA Ship Rainier in conjunction with surveys being made to gather information for use in updating National Ocean Survey navigational publications such as the U.S. Coast Pilot, tidal prediction tables and Knik Arm nautical charts.

In confirming the existence of the bore, the oceanographers reported that it had apparently diminished in size and regularity from previous years. Tidal bores of a diminishing nature are of interest to the scientific and marine communities since they may indicate changes in bottom topography.

Robert Carrodus (left), Chief Illustrator at the Environmental Research Laboratories' Atlantic Oceanographic and Meteorological Laboratories in Miami, Fla., waits with guest star Keith Andes for the shooting of a scene for a forthcoming television episode of "Caribe" that was filmed at AOML recently.



Scenes were filmed by the Quinn Martin Productions film crew in the offices of AOML Director Dr. Harris B. Stewart, Jr., and Administrative Officer Jack Egland, as well as outside the building, in the parking lot, and around the flagpole.

Mr. Carrodus played the role of a U.S. Marine Lance Corporal, and Carol Wolverton and Becky Newell of Dr. Stewart's office were "extras."

The episode, "One Second to Doom," is scheduled to be televised over ABC-TV from 10 to 11 p.m. EDT on Monday, April 14. Residents of other time zones should check their TV listings for the time.

TIROS I Satellite Anniversary Marked

(Continued from page 1)

Forecasters in Boston on November 5, 1969, used the morning satellite picture to brief a search and rescue party heading for a tanker breaking up in the Atlantic. Weather and clouds caused by a developing storm system were clearly displayed in the picture. The party was able to avoid areas of squalls and high seas enroute, thus saving valuable time in accomplishing the rescue.

Hurricane FIFI (Sept. 14-21, 1974), the severest hurricane of record to affect Honduras, had day-and-night continuous coverage by satellite. Like AGNES in 1972, almost all of the several thousand deaths and damage caused by FIFI resulted from river floods and torrential rains in mountainous areas.

"Today," said Mr. Johnson, "we are continuing to improve the quality of data for meteorological analysis and forecasting by providing global atmospheric coverage regularly and reliably, day and night. TIROS 1 was the catalyst for what has become NOAA's operational weather satellite system."

Preliminary Results of Deep Ocean Mining Environmental Study Reported

(Continued from page 1)

environment.

As the first step in DOMES, scientists conducted an initial baseline study last spring to begin to establish the pre-mining condition of an area of the Pacific where mining corporations are already filing claims. The study was led by Dr. Oswald A. Roels of Lamont-Doherty Geological Observatory and the City University of New York. For four weeks, he and 16 other oceanographers and technicians aboard the University of Hawaii's Ship Moana Wave studied the living organisms, sediments, currents, and waters within a 20,000-square-mile (52,000-square-kilometer) area 850 miles (1,360 kilometers) southeast of Hawaii. More than a ton of the nodules were collected and an underwater camera took 2,204 photos of the sea floor.

The job of analyzing the data these scientists collected will take months, but preliminary results are in, and they provide new insights into the marine environment of which the manganese nodules are an integral part.

Some deep-sea mining systems would bring large quantities of bottom water and some sediments to the surface; all would stir up clouds of sediment near the bottom. Dr. Roels surmises from salinity and temperature measurements that bottom waters brought to the surface would probably remain there.

The DOMES researchers analyzed water samples for amounts and species of phytoplankton and mixed sediments and made up varying mixtures of sediments, bottom water, and surface water and incubated them, and discovered that phytoplankton development was generally proportional to the amount of nutrient enrichment. But, Dr. Roels adds, deep water discharge at the surface will probably amount to less than one percent of the total mixture.

The researchers also found a series of phytoplankton spores buried in the sediments which bloomed to life when brought to the surface and exposed to light. The spores were cultured for later identification, and specimens still survive in the laboratory.

The underwater photographs that have been studied so far show that the ocean floor in the study area seems to have a population density of about one large organism (such as a sponge or a sea star) per 120 square yards (100 square meters).

One of the sediment samples has been analyzed and found to contain four species of foraminigera—tiny creatures with delicate calcareous skeletons.

At least two other ocean sites, located in areas with different oceanographic characteristics, may be subjected to similar scrutiny on a seasonal basis to complete the baseline studies.

Current Vacancies in NOAA

To insure that NOAA employees are aware of job possibilities throughout the agency, a list of current NOAA-wide vacancies is published below. Employees interested in any of the listed vacancies should contact their servicing personnel office for information on where to apply.

Announcement No.	Position Title	Grade	MLC	Location	Issue Date	Closing Date
523-75	Supv. Meteorologist	GS-12	NWS	Daytona Beach, Fla.	3/28/75	4/11/75
524-75	Meteorological Tech.	GS-9	NWS	Pittsburgh, Pa.	3/28/75	4/11/75
526-75	Meteorologist	GS-11	NWS	Kansas City, Mo.	3/28/75	4/11/75
527-75	Oceanographer	GS-13/14	HDQS	Rockville, Md.	3/26/75	4/16/75
528-75	Oceanographer	GS-13/14	HDQS	Rockville, Md.	3/26/75	4/16/75
529-75	Supv. Meteorologist	GS-12	NWS	Apalachicola, Fla.	4/4/75	4/18/75
530-75	Supv. Meteorologist	GS-11	NWS	Palmdale, Calif.	4/4/75	4/18/75
532-75	Supv. Meteorologist	GS-11	NWS	Neenah, Wis.	4/4/75	4/18/75
534-75	Geophysicist	GS-11/12	ERL	Boulder, Colo.	4/7/75	4/21/75
533-75	Supv. Computer Spec.	GS-13	NESS	Suitland, Md.	4/7/75	4/28/75

Graduation Ceremony Held

Administrative Fellow: George Yang and Robert Carnahan, Acting Assistant Administrator for Administration.

Administrative Trainee Group IX: Constance Zarbo, Personnel; Arlene Wingfield, U.S. Department of Labor; Paul McAdoo; Pauline Shanker; Lanny Reese; Norma Lopes; Joseph Henderson; Barbara Lindsay; Bruce Brooks; Lucille Sprigg; Robert Ahlstedt; Robert Carnahan, Acting Assistant Administrator for Administration.

Arlene Wingfield, Special Assistant to the Director of the Women's Bureau, U.S. Department of Labor.

Friday, February 7, 1975, was graduation day for the members of Administrative Trainee Group IX, and Mr. George Yang, NOAA's 1974 Administrative Fellow. Guest speaker at the ceremony was Ms. Arlene Wingfield, Special Assistant to the Director of the Women's Bureau, U.S. Department of Labor. Ms. Wingfield commended NOAA for demonstrating its dedication to equal employment opportunity for all, through continued support of both the Administrative Trainee and Administrative Fellowship Programs.

Mr. Robert Carnahan, Acting Assistant Administrator for Administration, awarded certificates to the following: George Yang (Administrative Fellow), Finance Division; Barbara Lindsay, Norma Lopes, and Pauline Shanker, Personnel Division; Robert Ahlstedt, Procurement; Bruce Brooks, Office of Management and Computer Systems; Joseph Henderson, Office of Programs and Budget; Paul McAdoo, Administrative Operations Division; Lucille Sprigg, National Ocean Survey; and Lanny Reese, National Weather Service, National Hurricane Center, Coral Gables, Florida.

Two additional members of Group IX received their training in NOAA field offices and were awarded their certificates at the field sites. The two trainees were: Jesus Arrendondo, NASO, Administrative Operations Division, Seattle, Washington; and Nancy Motot, Personnel Division, NWS Western Region, Salt Lake City, Utah.

LWOP or AWOL ?

Because both leave without pay (LWOP) and absence without leave (AWOL) are nonpaid absences from work, employees and supervisors may not realize that there is a vast difference between the two.

LWOP is a temporary nonpay status and absence from duty granted upon the employee's request. It is approved leave. AWOL, on the other hand, is absence from duty that has not been approved.

LWOP may be granted by management, at the request of the employee, in those cases where there is good justification for it. For example, an employee may request that LWOP be granted for maternity reasons or to recuperate from an illness. If the absence is for 30 days or less, it is requested by an SF-71, "Application for Leave," which is submitted and approved in accordance with Chapter 12, "Leave," (Section 12-04) of the NOAA Personnel Handbook. If the absence is for more than 30 days, or extended to more than 30 days, it is submitted on an SF-71, and accompanied by a memorandum citing the reasons for the request, and an SF-52, "Request for Personnel Action." These documents are submitted through channels to the appropriate personnel officer for processing. LWOP works a hardship on the organization or office and, therefore, is approved only when there is good justification for doing so. Unless a particular case is especially meritorious, the employee will generally be granted LWOP only when all annual leave, compensatory leave, shore leave, or sick leave (if appropriate) has been exhausted. Approval of LWOP must be obtained in advance of the leave.

AWOL is absence that is neither granted nor approved by management. It is failure to report for duty—an unexcused, unapproved absence, even if only for a short period—and, therefore, disciplinary action—ranging from an oral reprimand to removal—may be warranted. Naturally, the severity of the penalty depends on the individual case. The mere fact that leave, either annual or sick, is requested and available for use, is not the point; the leave must be approved. In cases of AWOL, the time cards are so noted and the notation remains unless management determines that the circumstances causing the absence were such that the leave should be authorized.

Like annual or sick leave, neither LWOP or AWOL may be used to cover periods of absence during overtime periods. Notwithstanding, the employee not reporting for scheduled overtime without good cause may be subject to disciplinary action.

An employee who requests that he or she be placed in a nonpay status for any period of time should be aware of the fact that nonpay status in excess of 30 days can affect the effective date of certain personnel actions. For example, nonpay status in excess of 30 days extends the three-year waiting period for conversion from career-conditional status to career status by the amount of the excess over 30 days. (A career-conditional employee appointed on 1-5-67 could be eligible for conversion to career tenure on 1-5-70. If, however, he or she took leave without pay from 3-1-67 to 5-15-67, a period of 2 months and 14 days, this would extend that employee's waiting period by the amount of excess over 30 days; i.e., by 1 month and 14 days, making the new completion date 2-19-70.)

Questions concerning the effect of nonpay status should be directed to your servicing personnel office.

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