Communication Plan for Tsunami Warning System

EIGHTH EDITION **SEPTEMBER 1975**

U.S. DEPARTMENT OF COMMERCE • National Oceanic and Atmospheric Administration • National Weather Service

The National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce has assigned responsibility for operating the Tsunami Warning System to the National Weather Service. The National Weather Service succeeds the Environmental Research Laboratories and the National Ocean Survey of NOAA and, previously, the U.S. Coast and Geodetic Survey in this capacity.

The Tsunami Warning System is a cooperative effort among nations bordering the Pacific Ocean to provide early warning of potentially disastrous seismic sea waves (tsunamis). Seismograph and tide data are collected and communicated to the Tsunami Warning Center in Honolulu, Hawaii, for analysis and evaluation. If warranted, tsunami watches and warnings are disseminated immediately by the Center to affected coastal populations. Since the Tsunami Warning System operates under emergency conditions, all participants must carry out their functions promptly. The objective of this plan is to facilitate efficient operation of the system; therefore, all participants should become thoroughly familiar with the contents of the plan and rigorously follow prescribed procedures.

George P. Cressman
Director, National Weather Service

Communication Plan for Tsunami Warning System

EIGHTH EDITION

Mark G. Spaeth (Compiler)
Geophysicist
National Weather Service

SILVER SPRING, MD.
September 1975

U.S. DEPARTMENT OF COMMERCE
Rogers C.B. Morton, Secretary
National Oceanic and Atmospheric Administration
Robert M. White, Administrator
National Weather Service
George P. Cressman, Director

CONTENTS

FIGURES

CHANGE LOG

Change no.	Page no.	Date posted	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

This form is for your convenience in making changes to the communication plan.

(COVER LETTER NOT REQUIRED)

Date _____

TO:

Director
National Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

SUBJECT:

Changes to Communication Plan for Tsunami Warning System, Eighth Edition

Mailing address has been changed:

Old address:

_____

_____

_____

Correct new address:

_____

_____

_____

Telephone number has been changed to: _____

_____

Change number of copies received to: _____

_____

Comments: _____

_____

_____

Signed: _____

_____

This form is for your convenience in making changes to the communication plan.

(COVER LETTER NOT REQUIRED)

Date _____

TO:

Director
National Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

SUBJECT:

Changes to Communication Plan for Tsunami Warning System, Eighth Edition

Mailing address has been changed:

Old address:

_____

_____

_____

Correct new address:

_____

_____

_____

Telephone number has been changed to: _____

_____

Change number of copies received to: _____

_____

Comments: _____

_____

_____

Signed: _____

_____

This form is for your convenience in making changes to the communication plan.

(COVER LETTER NOT REQUIRED)

Date _____

TO:

Director
National Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

SUBJECT:

Changes to Communication Plan for Tsunami Warning System, Eighth Edition

Mailing address has been changed:

Old address:

_____

_____

_____

Correct new address:

_____

_____

_____

Telephone number has been changed to: _____

_____

Change number of copies received to: _____

_____

Comments: _____

_____

_____

Signed: _____

_____

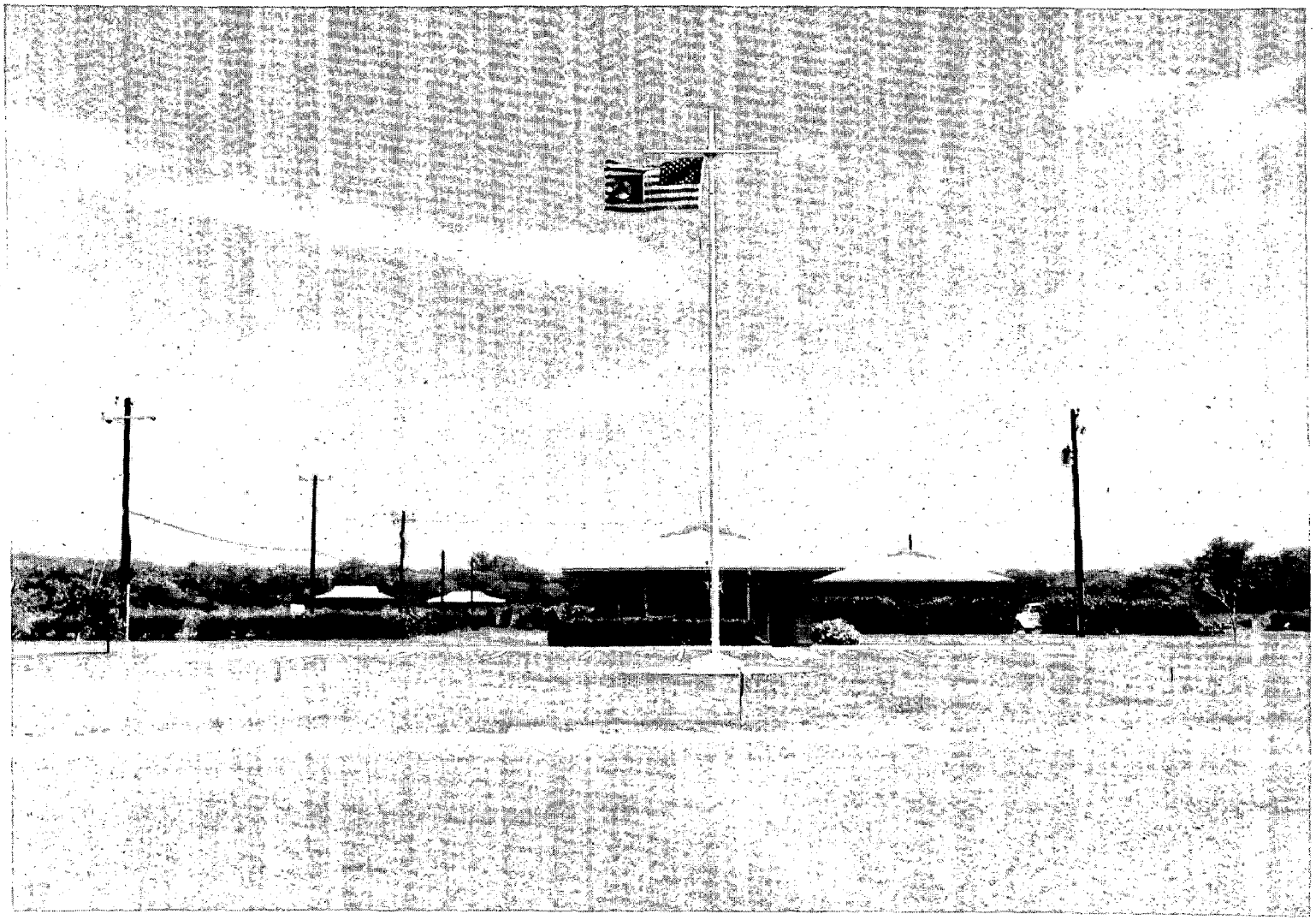

Figure 1.--Honolulu Observatory, Hawaii, the Operation Center for the Tsunami Warning System

SECTION I. TSUNAMIS

1.1 NATURE AND ORIGIN

A tsunami or seismic sea wave is a series of waves of extremely long wavelength and period caused by an underwater disturbance. Although most tsunamis are associated with large earthquakes in which the epicenters underlie or border the ocean floor, the generating mechanism is not positively known. Vertical displacement of the ocean floor during an earthquake may be responsible, or possible submarine avalanches on the slope of oceanic trenches, or generation of resonant oscillations of trench water by long-period earthquake waves. Submarine volcanic eruptions also have been known to generate tsunamis.

All submarine earthquakes do not produce tsunamis, and all tsunamis are not large enough to cause damage; however, occasional large waves have caused great destruction and loss of life in coastal areas. At present, there is no way to determine if an earthquake has generated a tsunami, except to note the occurrence and epicenter of the earthquake and then detect the arrival of the characteristic waves at a network of tide stations. The waves, although often called tidal waves, have nothing to do with the tides.

1.2 FREQUENCY OF OCCURRENCE

During the 74-year period from 1900 to 1973, 200 tsunamis were observed or recorded in the Pacific Ocean. Forty-one caused casualties and damage near the source only; nine caused widespread destruction throughout the Pacific. Almost one-third of the total tsunamis were generated in or near Japan, although most of these were minor.

The greatest number of tsunamis during any 1 year was 11 in 1938. All were minor and caused no damage. Only 9 years of the period were free of tsunamis.

The distribution of tsunami generation in other areas is as follows: South Pacific, 14 percent; South America, 10 percent; Formosa, Philippines, Ryukyu Islands region, 11 percent; Kuril Islands and Kamchatka, 10 percent; Mexico and Central America, 7 percent; Alaska and Aleutian Islands, 6 percent; Indonesia, 5 percent; West Coasts of Canada and the United States, 2 percent; and Hawaii, 2 percent.

1.3 PROPAGATION

Tsunamis travel outward in all directions from the generating area. Their speed depends on the depth of water, so that the waves undergo accelerations and decelerations in passing over an ocean bottom of varying depth. In the deep and open ocean, they travel at speeds of 500 to 1000 kilometers per hour (300 to 600 miles per hour). The distance between successive crests can be as much as 500 to 650 kilometers (300 to 400 miles); however, in the open ocean, the height of the waves may be no more than 30 to 60 centimeters (1 or 2 feet), and the waves pass unnoticed. Variations in tsunami propagation result when the propagation impulse is stronger in one direction than in others because of the orientation or dimensions of the generating area and where regional topographic features modify both the wave form and rate of advance. Upon reaching shoaler water, the speed of the advancing wave diminishes, its length decreases, and its height increases greatly, owing to the piling up of water. Configuration of coastline, shape of ocean floor, and character of advancing waves play an important role in the destruction wrought by tsunamis along any coast, whether near the generating area or thousands of kilometers from it. Consequently, detection of relatively small tsunamis at any locality warrants immediate reporting--through the Tsunami Warning System--to spread the alarm to all coastal localities of approaching potentially dangerous waves.

1.4 OBSERVABLE FEATURES

The successive waves of a tsunami in the deep sea have such great length and so little height they are not visually recognizable from a surface vessel or from an airplane. The passing waves produce only a gentle rise and fall of the sea surface. During the April 1946 tsunami at Hawaii, ships standing off the coasts observed tremendous waves breaking on shore but did not detect any change in sea level at their offshore locations. At present, detection of tsunamis is possible only near shore where the shoaling effect described in topic 1.3 can be observed. The first visible indication of an approaching tsunami is often a recession of water caused by the trough preceding an advancing wave. Any withdrawal of the sea, therefore, should be considered a warning of an approaching wave. A rise in water level also may be the first event. Tide-gage records of the Chilean tsunami of May 22, 1960, generally showed a rise in water level as the first indication of this tsunami. This rise amounted to about one-half the amplitude of the following decrease in water level. Under certain conditions, the crest of an advancing wave can overtake the preceding trough while some distance offshore. This causes the wave to proceed shoreward as a bore--a wave with a steep churning front.

1.5 DESTRUCTIVE FORCE

The force and destructive effects of tsunamis should not be overlooked. At some places, the advancing turbulent wave front is the most destructive part of the wave. Where the rise is quiet, the outflow of water to the sea between crests may be rapid and destructive, sweeping all before it and undermining roads, buildings, and other works of man with its swift currents. Ships, unless moved away from shore, can be thrown against breakwaters, wharfs, and other craft or washed ashore and left grounded during withdrawals of the sea.

In the shallow waters of bays and harbors, a tsunami frequently will initiate seiching. If tsunami period is related closely to that of the bay, the seiche is amplified by the succeeding waves. Under these circumstances, maximum wave activity often is observed much later than the arrival of the first wave.

1.6 PERIOD AND DURATION

A tsunami is not one wave, but a series of waves. The time that elapses between passage of successive wave crests at a given point usually is from 10 to 45 minutes. Oscillations of destructive proportions may continue for several hours, and several days may pass before the sea returns to its normal state.

1.7 HISTORICAL TSUNAMIS

The most destructive tsunami of recent history was generated along the coast of Chile on May 22, 1960. No accurate assessment of the damage and deaths attributable to this tsunami along the coast of Chile can be given; however, all coastal towns between the 36th and the 44th parallels either were destroyed or heavily damaged by the action of the waves and the quake. The combined tsunami and earthquake toll included 2,000 killed, 3,000 injured, 2,000,000 homeless, and $550 million damage. Off Corral, the waves were estimated to be 20.4 meters (67 feet) high. The tsunami caused 61 deaths in Hawaii, 20 in the Philippines, 3 in Okinawa, and 100 or more in Japan. Estimated damages were $50 million in Japan, $24 million in Hawaii, and $1 million along the west coast of the United States. Wave heights varied from slight oscillations in some areas to ranges of 12.2 meters (40 feet) at Pitcairn Island; 10.7 meters (35 feet) at Hilo, Hawaii; and 6.1 meters (20 feet) at various places in Japan.

Major tsunamis normally are associated with great earthquakes of magnitude 8 or larger; however, on April 1, 1946, an earthquake of magnitude 7.2 south of Unimak Island in the Aleutian Islands generated a tsunami that left 159 dead in Hawaii. Waves of 9 to 17 meters (30 to 55 feet) were observed throughout the islands, demolishing many structures. Near the tsunami source, a lighthouse at Scotch Cap on Unimak Island was destroyed by waves that surged to a height of over 30 meters (100 feet).

Two of the most devastating tsunamis were caused by the great Krakatoa explosion of August 27, 1883, and the Sanriku earthquake of June 15, 1896. The former caused waves of over 30 meters (100 feet) that drowned 36,500 persons in western Java and southern Sumatra. The latter caused waves up to 30 meters (100 feet) at the head of Kamaishi Bay and the loss of 27,000 lives.

The costliest tsunami ever to strike the United States was generated by the Prince William Sound, Alaska, earthquake of March 28, 1964. Fatalities totaled 122, and over $94 million in damage resulted in Alaska, California, Hawaii, Oregon, and Washington.

SECTION II. THE TSUNAMI WARNING SYSTEM

2.1 HISTORY

After the Aleutian tsunami of April 1, 1946, caused major damage and many casualties in the Hawaiian Islands, the Coast and Geodetic Survey (C&GS) began to develop a means of providing warning to the population of Hawaii in the event of the occurrence of another tsunami. To accomplish this, C&GS had to solve a number of technical problems.

To be effective, a warning system had to be able to detect and locate rapidly earthquakes in the Pacific region and, if an earthquake occurred in an area where tsunami generation was possible, to determine quickly whether a tsunami had in fact been generated. In addition, a method had to be developed whereby accurate arrival times of the tsunami at various places could be forecast.

For meeting this last requirement, a tsunami travel time chart for Honolulu was prepared (figure 4). The chart consists of a series of more or less concentric lines overprinted on a chart of the Pacific Ocean. The lines represent distances from Honolulu for each half hour of the wave travel time. To Honolulu, travel time is obtained by plotting the epicenter of an earthquake on the chart and noting its position with respect to the time lines. When given the time of the disturbance, the arrival time of the first wave of the tsunami at the Honolulu tide station becomes immediately available. Travel time charts also are prepared for the other tide stations in the Tsunami Warning System (TWS).

Because some tide stations in the TWS had relatively poor communications and because tide gages normally are checked only once a day, C&GS personnel designed a tsunami detector that is actuated by the wave motion of a tsunami to ring an alarm. The alarm, located where it would always be heard by personnel at a tide station, insures an early warning that a tsunami has been generated whether a request for data has or has not been received at the tide station. Since the detector normally is actuated by the first part of the wave motion before the arrival of the destructive part, it can be used locally to sound an alarm.

In 1946, photographic techniques generally were used for recording earthquakes because they were simple, practical, and precise. The TWS, however, needed visible recording equipment that could be used in conjunction with existing seismographs. Various instrumental systems were tried before one was selected. In 1947 and 1948, the new instruments were built and installed at three C&GS observatories. These installations were modified during the summer of 1950 by the addition of a new amplifier developed by C&GS scientists. The new amplifier included an alarm circuit so that, whenever a major earthquake was recorded, an audible and/or visible alarm was tripped, thus insuring the prompt observation of all major earthquakes.

Since the system would not operate often enough to justify the maintenance of an extensive communication network, the collaboration of the armed forces and the Civil Aeronautics Administration (now the Federal Aviation Administration) was sought. At a meeting on August 12, 1948, attended by representatives of the U.S. Army, Navy, Air Force, the CAA, and the Coast and Geodetic Survey, a tentative communication plan was approved and the operation of the Coast and Geodetic Survey's Seismic Sea Wave Warning System, now the Tsunami Warning System, began.

Initially, the TWS consisted of the C&GS seismological observatories at College and Sitka, Alaska; Tucson, Arizona; and Honolulu, Hawaii; and tide stations at Attu, Adak, Dutch Harbor, and Sitka, Alaska; Palmyra Island; Midway Island; Johnston Atoll; and Hilo and Honolulu, Hawaii. Additional seismological and tide stations have joined or left the TWS. The currect participants are listed in section VII.

Initially, the TWS was to supply tsunami watch and warning information to the civil authorities of the Hawaiian Islands and to various military headquarters in the Hawaiian Islands for dissemination to military bases throughout the Pacific and to islands in the U.S. Trust Territory of the Pacific. Beginning in October 1953, the first addition to the areas receiving warnings was made--the warning information furnished to the civilian authorities in the Hawaiian Islands also was given to the Civil Defense agencies of California, Oregon, and Washington. The great destruction caused by the May 1960 Chilean tsunami prompted a large number of countries and territories to join the TWS. Current recipients of tsunami watch and warning information are listed in topic 8.2.

2.2 OBJECTIVES

The objectives of the Tsunami Warning System have been stated in various ways in different publications. Essentially, the system has the function of detecting and locating major earthquakes in the Pacific region, determining whether they have generated tsunamis, and providing timely and effective tsunami information and warnings to the population of the Pacific to minimize the hazards of tsunamis, especially those to human life and health.

2.3 DESCRIPTION

The TWS requires the participation of many seismic, tide, communication, and dissemination facilities operated by most of the nations bordering the Pacific. Operational control of the system is maintained by the Director of the Tsunami Warning Center at Honolulu Observatory, Hawaii.

Functioning of the system begins with the detection, by any participating seismic observatory, of an earthquake of sufficient size to trigger the alarm attached to the seismograph at that station. The alarm thresholds are set for each station so that ground vibrations of the amplitude and duration associated with an earthquake of approximate magnitude 6.5 or greater anywhere in the Pacific region will cause them to sound. This magnitude is below the threshold for issuing watch and warning messages. Personnel at the station immediately interpret their seismograms and send their readings to Honolulu Observatory (HO). Upon receipt of a report from one of the participating seismic observatories or as a consequence of the triggering of their own seismic alarm, HO personnel send messages requesting data to the observatories in the system.

When sufficient data have been received for HO to locate the earthquake and compute the magnitude, a decision is made as to further action. If the earthquake is strong enough to cause a tsunami and is located in an area where tsunami generation is possible, HO will request participating tide stations located near the epicenter to monitor their gages for evidence of a tsunami. Watch bulletins are issued to the dissemination agencies for earthquakes of magnitude 7.5 or greater (7 or greater in the Aleutian Island region), alerting them to a possibility that a tsunami has been generated and providing data that can be relayed to the public so necessary preliminary precautions can be taken. A watch also may be disseminated by HO upon the issuance of warnings by regional warning centers. Since the regional systems use different criteria for their disseminations (appendix A for Alaska), a watch may at times be issued by HO for earthquakes with magnitudes less than 7.5.

When reports are received from tide stations, they are evaluated; if they show that a tsunami has been generated that poses a threat to the population in part or all of the Pacific, a warning is transmitted to the dissemination agencies for relay to the public. The dissemination agencies then implement predetermined plans to evacuate people from endangered areas. If the tide station reports indicate that either a negligible tsunami or no tsunami has been generated, HO issues a cancellation of its previously disseminated watch.

2.4 REGIONAL WARNING SYSTEMS

A tsunami originates in or near the epicentral area of the earthquake that creates it. A tsunami travels outward in all directions from this epicenter at a speed that depends on ocean depths. In the deep ocean, the speed may exceed 925 kilometers per hour (500 knots); thus, the need for rapid data handling and communication becomes obvious. Because of the time spent in collecting seismic and tidal data, the warnings issued by the Honolulu

Observatory cannot protect areas against tsunamis generated in adjacent waters. For providing some measure of protection against local tsunamis in the first hour after generation, regional warning systems have been established in some areas.

To function effectively, these regional systems generally have data from a number of seismic and tide stations telemetered to a central headquarters. Nearby earthquakes are located, usually in 15 minutes or less, and a warning based on seismological evidence is released to the population of the area. Since the warning is issued on the basis of seismic data alone, one may anticipate that warnings occasionally will be issued when tsunamis have not been generated. Since the warnings are issued only to a restricted area and confirmation of the existence or nonexistence of a tsunami is obtained rapidly, dislocations due to the higher level of protection are minimized. Among the most sophisticated of the regional systems are those of Japan and Alaska. The Alaskan system is described in appendix A. The description of the Japanese system may be found in the publication by the Japan Meteorological Agency (1965) or in the paper by Wadati et al. (1963).

SECTION III. COMMUNICATION REQUIREMENTS AND METHODS

3.1 ABBREVIATIONS AND TERMS

The abbreviations and terms used have the following meanings.

AeroComSta	Aeronautical Communication Station
AFB	Air Force Base
AFTAX	AFTN Automatic switching center
AFTN	Aeronautical Fixed Telecommunication Network
AKTWS	Alaska Regional Tsunami Warning System
CAA	Civil Aeronautics Administration (Philippines and Western Samoa)
C&GS	Coast and Geodetic Survey (formerly a bureau of the U.S. Department of Commerce)
DA	Department of the Army
DCA	Defense Communications Agency
DCPA	Defense Civil Preparedness Agency
DCS	Defense Communications System (U.S. Department of Defense)
DOD	Department of Defense
ETA	Estimated Time of Arrival
FAA	Federal Aviation Administration
FDAA	Federal Disaster Assistance Administration
HO	Honolulu Observatory
IATSC	International Aeronautical Telecommunications Switching Center
IFSS	International Flight Service Station
JMA	Japan Meteorological Agency
Lat	Latitude (in degrees north or south)
Long	Longitude (in degrees east or west)
LORAN	Long Range Aid to Navigation
NASA	National Aeronautics and Space Administration
NavCommSta	Naval Communication Station
NAWAS	DCPA National Warning System
NOAA	National Oceanic and Atmospheric Administration (U.S. Department of Commerce)
NOS	National Ocean Survey (U.S. Department of Commerce)
NWS	National Weather Service (U.S. Department of Commerce)
Precedence	(See topic 3.4.1.)
Priority	(See topic 3.4.1.)
T.O.	Tide observer
TSUNAMI	Term used as the first word of a message text to identify a message that pertains to the TWS and requests or conveys factual information, conditions, or data
TSUNAMI DUMMY	Term used as the first words of a message text to identify each "dummy" or test message pertaining to the TWS
TWS	Tsunami Warning System
WMO	World Meteorological Organization

3.2 FACILITIES TO BE USED

To ensure the timely and effective operation of the TWS, communication facilities capable of handling rapidly the data requests from HO, seismograph and tide reports to HO, and watch and warning messages are essential. Since such traffic is relatively infrequent, existing communication channels are used with some supplementation where absolutely necessary, instead of establishing a separate communication system that would, to a large extent, duplicate existing channels. Hence, the communication channels under the management and control of the DCA, FAA, NASA, the Army, Navy, Air Force, Coast Guard, various foreign

agencies, and private companies, as outlined herein, will be used to handle the message traffic involved between HO and the several seismological and tide stations and dissemination agencies participating in the warning system.

3.3 PRECEDENCE AND PRIORITY OF MESSAGES

3.3.1 "Live" or actual distress traffic

Data requests, seismograph reports, tide reports, and other messages containing factual reports of unusual natural phenomena that may cause or have caused a condition of distress normally will be assigned Flash precedence when intended for transmission via DOD communication channels. Messages of these types when prepared for transmission via AFTN or FAA communication facilities will be assigned SS priority, which will afford handling on civil circuits substantially equivalent to the handling of Flash precedence traffic on DOD circuits; when prepared for transmission via NASA communication facilities, they will be assigned Urgent precedence. The originator of any message of the above types may assign a lower precedence or priority if the desired speed of handling or other circumstances so warrant.

3.3.2 "Dummy" or test message traffic

Test traffic (including dummy messages to determine transmission time under various conditions or for other purposes) and similar types of messages will be assigned appropriate precedence or priority by the originator. Message traffic of these types, when intended to determine probable transmission time under actual distress conditions or over various routes, normally will be assigned Immediate precedence for transmission over DOD channels, Urgent for NASA channels, or SS priority for transmission via FAA channels, but must include the words "TSUNAMI DUMMY" for proper identification. Such messages may be assigned a lower precedence or priority at the discretion of the originator.

3.3.3 Routine data message traffic

Reports of instrument failure or deficiency and similar routine message traffic normally will be assigned Routine precedence for transmission via DOD or NASA channels or FF priority for handling via FAA circuits.

3.3.4 Transfer between Military, FAA and NASA channels

If any message bearing Flash or Immediate precedence is passed from a DOD channel to an FAA communication station for relay, the FAA operating personnel will handle it as a message of SS priority. If any message bearing Flash or Immediate precedence is passed from a military channel to a NASA communication station for relay, the NASA operating personnel will handle it as a message of Urgent precedence. A message bearing any precedence lower than Immediate that is passed from a DOD channel to FAA or NASA for relay will be handled as a message of correspondingly lower priority or precedence. The same principles apply to messages passed from FAA or NASA channels to DOD communication facilities for relay. A recommendation is that, insofar as practicable, FAA and NASA personnel change (or convert) the format and the priority or precedence indicator on a message to the equivalent DOD format and precedence designation before passing the message to a DOD communication activity for relay. (See topic 3.4.1.)

3.4 PREPARATION OF MESSAGES BY ORIGINATOR

For permitting correct identification of messages, providing for proper handling, and facilitating evaluation, each message will contain certain elements that are listed in the sequence in which they will appear in each message, together with an explanation, in topics 3.4.1 through 3.4.5.

3.4.1 Precedence designation (or priority indicator)

A precedence designation (or priority indicator for civil aviation facilities) is used to indicate the relative order in which a message of one precedence designation (or

priority) is handled or processed with respect to all other messages. Precedence designations and priority indicators express or signify:

To the originator--the required (or desired) speed of delivery to the addressee;

To communication personnel--the relative order of handling and delivery; and

To the addressee--the relative order in which he should note the message.

Messages pertaining to the TWS normally will not be assigned a precedence higher than Flash or Urgent nor a priority higher than SS. (See the following tabulation.) Hence, the originator will assign to each message an appropriate DOD precedence designation [identified by (M)], a civil aviation priority indicator [identified by (C)], or a NASA precedence designation [identified by (N)].

	Precedence	Designation		Explanation
(1)	Flash	(M)	Z	Flash messages are processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence.
		(C)	SS	
		(N)	UU	
(2)	Immediate	(M)	O	Immediate messages are processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence. See NOTE.
		(C)	SS	
		(N)	UU	
(3)	Routine	(M)	R	Routine messages are processed, transmitted, and delivered in the order received and after all other messages of higher precedence.
		(C)	FF	
		(N)	RR	

NOTE: The FAA priority indicator SS and the NASA precedence Urgent usually will afford more rapid handling than Immediate precedence on DOD circuits; however, the lack of exact equivalents between DOD and NASA precedences and civil priorities is not a matter of significant consequence. (See topic 3.3.)

3.4.2 Date-time group

A date-time group will be assigned to each message by the originator to indicate the day, hour, and minute (expressed in Greenwich Meridian Time) at which the preparation of the message actually is completed by the originator. The date-time group consists of:

Two digits (from 01 to 31) to denote the day of the month.

Four digits to denote the hour and minute of the day expressed in the 24-hour system, the first two (from 00 to 23) to indicate the hour and the last two (from 00 to 59) to indicate the minute.

The zone suffix letter Z to denote that the day, hour, and minute are expressed in Greenwich Meridian Time. For example, the date-time group of a message completed by the originator at 0821 GMT on April 3 would be 030821Z. The date-time group serves as identification for any specific message and also aids the addressee in evaluating a message since it establishes the exact time of the origin. Hence, all originating personnel are cautioned to insure that the date-time group is accurate.

3.4.3 Originator

The originator will be identified by the designator assigned to the station at which the message is prepared. The designators for all stations are listed under the caption "Station Designator" in topics 7.1, 7.2, 7.3, and 8.2. On each message, the originator will be entered as:

FROM (Station Designator of seismological or tide station or dissemination agency at which message is prepared).

3.4.4 Addressee

The addressee will be indicated by the designator assigned to the station for which the message is intended. The designators of all stations are listed under the caption "Station Designator" in topics 7.1, 7.2, 7.3, and 8.2. On each message, the addressee will be entered as:

TO (Station Designator of seismological, or tide station or dissemination agency for which message is intended).

Dissemination agencies also may receive messages addressed to collective addresses. These collective addresses are used to save time in the preparation and transmission of tsunami watch and warning bulletins.

3.4.5 Text content and message identification

(a) Messages containing factual information. TSUNAMI will be entered as the first word of the text to identify each message that contains or requests factual or "live" information such as seismograph reports, tide reports, instrument data, equipment failure, and unusual natural phenomena. For each seismograph report, the remainder of the text will consist of one or more of mixed groups of letters and figures indicating seismic phase arrival times and data concerning depth, distance, and magnitude. For every message other than a seismograph report, the remainder of the text will be in plain English. Watch and warning messages begin with a bulletin number and the word "TSUNAMI."

(b) Test or dummy messages. The words "TSUNAMI DUMMY" will be entered as the first words of the text to identify each dummy message or test message used to determine transmission time, test the operation of the warning system, or keep communication operating personnel familiar with the procedure for handling message traffic pertaining to the Tsunami Warning System.

Sample messages (both live and test) prepared in accordance with the above instruction are included in topics 4.4, 5.4, and 6.5.

3.5 PROCESSING OF MESSAGE BY COMMUNICATION ACTIVITY

The communication activity at which a message pertaining to the warning system is first received from the originator will process it in accordance with existing instructions. The message thereafter will be handled in the same manner as other traffic normal to the DOD, NASA, civil aviation, or other channels involved. The processing carried out by the communication activity does not affect the content of the messages.

3.6 COMMUNICATION OPERATING INSTRUCTIONS

The instructions and explanatory comments in this topic are applicable to the listings in topics 7.1, 7.2, 7.3, and 8.2. Each entry under the caption "Mail Address" is the official designation and mail address of the agency indicated; the entry of telephone number(s) is included to facilitate telephonic communication and is NOT a part of the official address. For each agency listed, the term under the caption "Station Designator" is the term that will be used in each message to indicate originator and addressee as explained in topics 3.4.3 and 3.4.4. This short descriptive title is intended to facilitate and expedite handling of messages by communication operating personnel. The methods of communication listed are those agreed upon by representatives of the FAA, DCA, Army, Navy, Air Force, NASA, Coast Guard, National Weather Service, and other agencies involved for handling messages pertaining to the TWS. They are listed for the information and guidance of all personnel involved, but are not intended to limit individual initiative. The methods are listed in order of relative preference on the basis of presently available information, but changes in relative preference by any station as warranted by local conditions and previous experience are authorized. Furthermore, all personnel involved are urged to exercise individual ingenuity and initiative as dictated by local circumstances at the time of emergency to accomplish transmission of each message to the addressee reliably and rapidly. For the transmission of messages via telephone, which will be necessary in some instances, observance of the following precaution is essential to prevent mistakes in

wording or transposition of figures in the seismograph reports. After copying the entire message, the person receiving the message will verify each word and group by repeating it to the person sending the message and securing acknowledgment.

NOTE: Any toll charges incident to the use of commercial facilities for the transmission of messages between an Army, Navy, Air Force, or FAA communication activity and any other station participating in the TWS will be borne by the National Weather Service. Exception: Foreign countries participating in the TWS will pay all toll charges for transmitting messages between seismic and tide stations and dissemination agencies and U.S. military, FAA, or NASA communication facilities.

SECTION IV. SEISMOGRAPH STATIONS

4.1 FUNCTION

Seismological stations (as listed in topic 7.2) detect earthquakes and submit seismograph reports that are the basis for the determination of earthquake epicenters and magnitudes by Honolulu Observatory (figure 1) and regional warning centers. Seismograph stations are requested to participate in the warning system whenever needed for the prompt location of epicenters and the determination of earthquake magnitudes.

4.2 DUTIES AND RESPONSIBILITIES

Seismograph stations report to HO and, if so instructed, to regional warning centers P-phase arrival times for all large earthquakes in the Pacific as soon as possible after they are recorded. Individual observatories may be alerted that an earthquake has occurred either by an alarm attached to one of their instruments or by arrival of a request for data. In addition, the seismograph stations should submit S-phase, magnitude, and depth-phase data (reported as AP) either in the initial message, if these data can be included without causing delay, or in a second message.

4.3 COMMUNICATIONS

Before a seismograph station can be incorporated into the warning system, adequate communication facilities must be available on a 24-hour-a-day basis. This requirement is due to the fact that tsunamis can strike at any time of day or night and reliable fast communication facilities must be immediately available.

In the case of stations located outside the United States or its possessions, the agency involved must assume the cost of any commercial communications involved in the transmission of messages to and from a U.S. or AFTN communication facility.

For speeding the collection of data, studies are being made of ways to telemeter the data directly to Honolulu in real time, either continuously or on an as-needed basis. Various types of transmission are being considered, including satellite relay, cable, and radio.

For testing the operation of the warning system, for keeping communication-operating personnel familiar with the procedures for handling message traffic pertaining to the system, and for determining transmission times, dummy or test messages are sent monthly to all stations.

4.4 SAMPLE MESSAGES

4.4.1 Test messages

The following are sample test or dummy messages prepared in accordance with the instructions included in section 3.

To seismograph stations:

SS
191901
FROM HONOLULU OBSERVATORY
TO NEWPORT OBSERVATORY
TSUNAMI DUMMY. ADVISE TIME OF RECEIPT OF THIS
MESSAGE AND SIGN.

Reply to HO:

SS
191920
FROM NEWPORT OBSERVATORY
TO HONOLULU OBSERVATORY
TSUNAMI DUMMY. YOUR 191901Z RECEIVED 191917Z.
SIGNED TRAVIS.

4.4.2 Live message

The following is a sample message illustrating a seismograph report prepared in accordance with the instructions in section 3.

Z 150837Z
FROM GUAM OBSERVATORY
TO HONOLULU OBSERVATORY
UNCLAS
TSUNAMI PO81527 AP081610 SO82241
MAGNITUDE 7.5

4.5 EVALUATION OF SYSTEM OPERATION

For the NWS to evaluate the operation of the warning system, all participants must submit logs covering periods of tsunami emergencies. These logs must include the text and time of transmission of all messages sent and the text and time of receipt for all incoming messages. If the station was alerted by an alarm attached to a seismograph, the time of such alerting should be noted. If tsunami effects are reported from the vicinity of the station, a summary of these effects should be included. The logs should be mailed to the Associate Director, Meteorology and Oceanography, National Weather Service, National Oceanic and Atmospheric Administration, Silver Spring, Maryland 20910, as soon as possible after each occurrence.

4.5.1 Sample seismological station log

Newport Geophysical Observatory
August 15, 1973

Time	To	From	Remarks
0221Z			Alarm sounded.
0225Z	HO	NEW	Tsunami. PO22117. More information to follow.
0232Z	NEW	HO	Tsunami. Request readings on earthquake of 0207Z this date.
0249Z	HO	NEW	Tsunami. PO22117 S3201. Distance 103 degrees, surface wave magnitude 7.6.

SECTION V. TIDE STATIONS

5.1 FUNCTION

Tide stations (as listed in topic 7.3) detect tsunamis by means of recording tide gages or automatic sea-wave detectors and submit reports to HO when requested or on their own initiative whenever a tsunami is detected. In areas where no tide stations participate in the warning system, additional stations will be sought whenever required to provide early confirmation that a tsunami has been generated, thus giving an earlier warning to those areas receiving tsunami warnings. As research progresses into methods of predicting wave runup, most likely additional tide stations will be needed to provide raw data on which to base predictions. As the system is expanded to provide warnings to new areas, additional tide stations frequently are required.

5.2 DUTIES AND RESPONSIBILITIES

Tide stations report to HO and to regional warning centers as instructed whenever a tsunami is detected or whenever they are queried. The onset of a tsunami should be reported as soon as possible and should include information on the initial rise or fall. Subsequent messages should be filed at intervals of approximately 0.5 hour for at least 2 hours and should give details of the wave action and a summary of local effects. If wave action still is increasing or damaging waves still are occurring at the end of 2 hours, the tide observer should continue reporting at 0.5-hour intervals until wave action decreases and damaging waves cease. Wave amplitudes should be measured from crest to trough or trough to crest. If the tide gage is destroyed or inaccessible, the best possible estimates of wave action should be sent to HO. Tide observers should be familiar with reporting procedures in the publication by the Coast and Geodetic Survey (1970).

5.3 COMMUNICATIONS

Before a tide station can be incorporated into the TWS, adequate communication facilities must be available on a basis of 24 hours a day. This is required because tsunamis can strike at any time of the day or night and reliable fast communication facilities must be immediately available. Because of advances being made in demand telemetry, some of the tide stations added to the TWS in the future may not be manned 24 hours a day; however, the need for communications will remain.

In the case of stations located outside the United States or its possessions, the agency involved must assume the cost of any commerical communications in the transmission of messages to and from a U.S. or AFTN communication facility.

For testing the operation of the warning system, for keeping communication-operating personnel familiar with the procedures for handling message traffic pertaining to the system, for determining transmission times, for insuring that tide observers are familiar with reporting methods, and for determining the length of time it takes the tide observer to obtain a reading from his gage, dummy or test messages are sent monthly to all tide observers. These messages require the observer to mark his record in accordance with instructions in section 5 of the publication by the Coast and Geodetic Survey (1970) and report the time and height of the mark and the time or receipt of the message from Honolulu Observatory.

5.4 SAMPLE MESSAGES

5.4.1 Test messages

The following are sample test or dummy messages prepared in accordance with the instructions included in section 3.

To tide stations:

0 191900Z SEPT 73
FM HONOLULU OBSERVATORY
TO ATTU TIDE OBSERVER
UNCLAS
TSUNAMI DUMMY. REPORT TIME OF RECEIPT OF
THIS MESSAGE. MARK TIDE RECORD AND REPORT
HEIGHT AND TIME OF MARK.

Reply to HO:

01919112 SEPT 73
FM ATTU TIDE OBSERVER
TO HONOLULU OBSERVATORY
UNCLAS
TSUNAMI DUMMY. YOUR 191900Z RECEIVED
AT 1909Z. TIDE MARK 0189 CM AT 1910Z.

5.4.2 Live message

The following is a sample message illustrating a tsunami report from a tide station; it has been prepared in accordance with the instruction in section 3.

SS
150935 SEPT 73
FROM KODIAK TIDE OBSERVER
FOR HONOLULU OBSERVATORY
TSUNAMI. DISTURBANCE BEGAN 0920Z. TIDE RECORD
SHOWS WATER ROSE 0018 CM IN SEVEN MINUTES.
WATER FALLING 0932Z. WILL REPORT FURTHER.

5.5 EVALUATION OF SYSTEM OPERATION

For the NWS to evaluate the operation of the warning system, all participants must submit logs covering periods of tsunami emergencies. These logs must include the text and time of transmission of all messages sent and the text and time of receipt for all incoming messages. If the station was alerted by an alarm attached to the tide gage, the time of such alerting should be noted. If tsunami effects are reported from the vicinity of the tide station, a summary of these effects should be included. Logs should be mailed to the Associate Director, Meteorology and Oceanography, National Weather Service, National Oceanic and Atmospheric Administration, Silver Spring, Maryland 20910, as soon as possible after each occurrence.

5.5.1 Sample of tide station log

U.S. Coast Guard LORAN Transmitting Station
Attu Island, Alaska
October 1, 1973

Time	To	From	Remarks
0716Z	Attu T.O.	HO	Tsunami. Earthquake occurred 0502Z Lat 43N Long 147E. Observe tide record 0745Z to 0845Z. Immediately report any unusual activity or reply negative at 0845Z. Immediately acknowledge receipt of this message.
0717Z	HO	Attu T.O.	Tsunami. Your 0701Z received 0716Z. Will comply.
0805Z	HO	Attu T.O.	Tsunami. Unusual disturbance began 0800Z. Water rose 0045 cm in 3 minutes. Now falling.

Time	To	From	Remarks
0830Z	HO	Attu T.O.	Tsunami. Reporting period 0800Z to 0830Z. Began 0800Z. Water rose 0045 cm in 3 minutes. Maximum wave 0116 cm fall.
0900Z	HO	Attu T.O.	Tsunami. Reporting period 0829Z to 0900Z. Maximum wave height 0158 cm.
0930Z	HO	Attu T.O.	Tsunami. Reporting period 0853Z to 0930Z. Maximum wave height 0132 cm.
1000Z	HO	Attu T.O.	Tsunami. Reporting period 0928Z to 1000Z. Maximum wave height 0098 cm. Will not report again unless waves become larger.

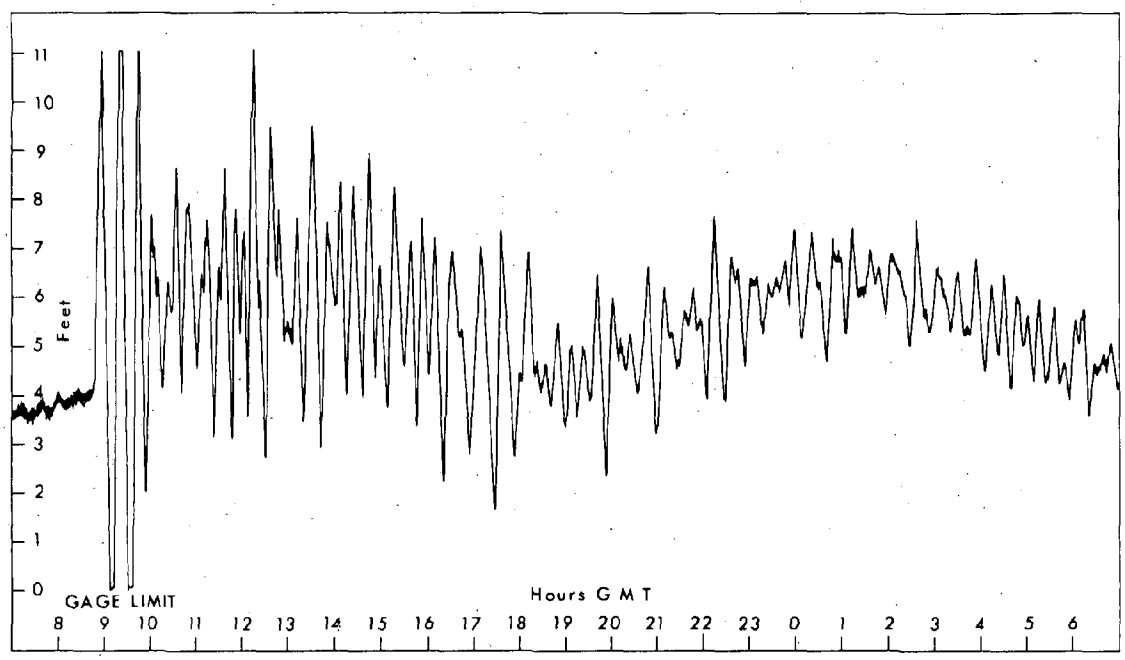

Figure 2.--Tide-gage record showing tsunami at Kahului, Maui Island, Hawaii, March 28-29, 1964, at approximate hours GMT

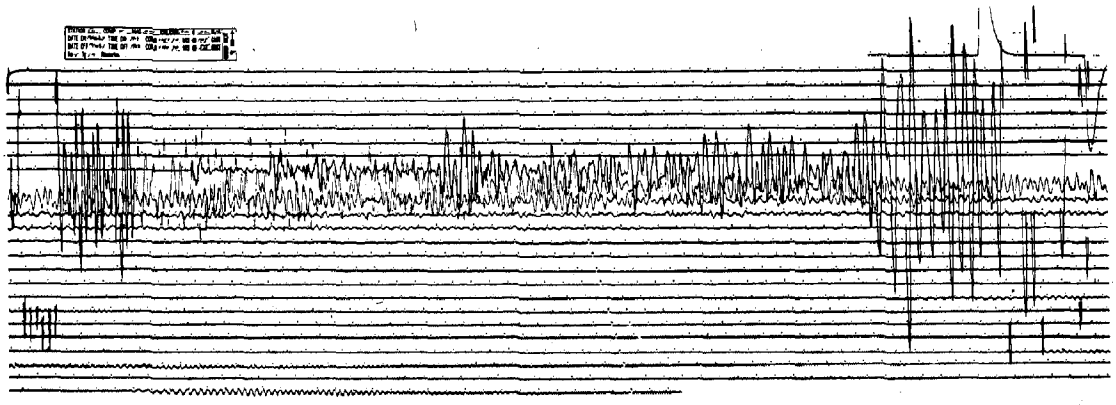

Figure 3.--College, Alaska, seismogram showing magnitude-7 earthquake centered near north coast of Chile, December 21, 1967

SECTION VI. DISSEMINATION OF TSUNAMI WATCH AND WARNING INFORMATION

6.1 DISSEMINATION AGENCIES

Agencies desiring to receive tsunami watch and warning information from HO first must meet several requirements.

6.1.1 Selection of agency

In order to limit the number of agencies to be contacted in the event of a tsunami, warnings generally are issued to only one agency in a country, territory, or administrative area. This agency usually is appointed by the central government or administrative head of the area concerned.

6.1.2 Warning plan

To insure the proper operation of the warning system, the agency designated to receive tsunami warnings must submit an outline to the National Weather Service showing how warnings will be released to the local population. The outline must contain the names and/or offices of the responsible administrators on both the central and local levels, the means of communication to be used, and the methods for disseminating warnings to the local population in the event of a tsunami. The outline also must include a procedure for reaching at any hour the head of the dissemination agency or a responsible assistant.

6.1.3 Communications

Any dissemination agency outside the United States or its possessions must accept responsibility for arranging communications between the agency and the nearest U.S. communication facility designated by the National Weather Service and for all communications within its area of responsibility. The dissemination agency will pay all toll charges for use of commercial facilities between its headquarters and the accepted U.S. facility.

6.1.4 Function

The dissemination agency provides the last vital link between the Tsunami Warning System and the public, the ultimate user of the warning information. As such, the dissemination agency must motivate the public (by both education and, where possible, by law) to take necessary and desired actions to protect life and property.

6.1.5 Duties and responsibilities

The dissemination agency and/or the governing body of areas subject to tsunami danger has the continuing responsibility for educating the public as to the dangers of tsunamis and for developing safety measures that must be taken to avoid loss of life and to reduce property damage. The National Weather Service will cooperate as far as possible in making available educational material for reproduction and distribution. Results of research conducted by the Environmental Research Laboratories and others will be utilized by the warning system and made available to interested scholars.

Responsible agencies should have well-developed emergency plans for all threatened localities. These plans should delineate clearly areas of possible inundation. Evacuation routes should be designated, and safe areas should be marked. The amount of advance warning necessary to insure evacuation from danger areas also should be known. Emergency duties and responsibilities should be designated, and all affected officials should be thoroughly familiar with their duties.

6.2 DISSEMINATION PROCEDURES

Tsunami watch and warning messages originate at Honolulu Observatory and are passed to dissemination agencies over the circuits described in topic 8.2. When time is available, the personnel of the dissemination agency evaluate the watch or warning and attempt to make some estimate of the probable impact of the disturbance. Such procedures of the emergency plan as are appropriate then are put into operation. Watch and warning information may be passed (depending on the time and facilities available) to the coastal population by any or all of the following methods: radio, television, sirens, bells, whistles, warning flags, mobile loud speakers, and personal contact.

6.3 WATCH AND WARNING INFORMATION

Honolulu Observatory issues two basic types of bulletins--watch bulletins and warning bulletins. Watch bulletins are issued when an earthquake has been detected which is of sufficient magnitude and in such a location that the generation of a tsunami is possible. They normally will include Estimated Times of (tsunami) Arrival (ETA) at tide stations in the warning system, if available and time permits.

Warnings are issued upon receipt by HO of positive evidence that a tsunami exists and will contain estimated times of arrival at tide stations in the warning system. Bulletins subsequent to the official warning message, designated Tsunami Warning Supplements, normally will carry information on wave heights and other information as deemed appropriate by HO. During an emergency, HO will not allow more than 1 hour to lapse between subsequent bulletins. This policy will be adhered to even when no new data have become available.

Watch and warning messages also will be issued from time to time by regional warning systems. These watches and warnings will be directed specifically to the area served by the regional system. The warnings issued by the regional warning systems usually are based on seismic data only.

Because of the amount of time required to obtain confirmation of the existence of a tsunami, warnings sometimes are delayed. Dissemination agencies should know how long in advance of a tsunami they need to receive a warning so as to clear local populations from areas likely to be affected. In the event that no warning is received before the beginning of this period, the recommended course would be to treat the previously received watch message as a warning and begin clearing danger areas. Dissemination agencies should take into account the stage of the tide and weather conditions when projecting expected tsunami danger. A wave that would cause no damage at low tide or on calm days could be highly destructive during high tide, high surf, or local high wind conditions.

6.4 ALL-CLEAR AND CANCELLATION INFORMATION

At present, HO does not have enough data available to enable it to determine when danger has passed for any given area. Local conditions can cause wide variations in tsunami wave action. Consequently, all clear determinations must be made by the local dissemination agencies. – In general, if wave action occurs, action agencies shall assume all-clear status when free from damaging waves for 2 hours unless additional ETAs have been announced by HO or local conditions warrant the continuation of warning status. If no wave or only insignificant waves occur, action agencies shall assume all-clear status 2 hours after the latest ETA announced by HO.

Honolulu Observatory occasionally will issue a watch or warning cancellation. Upon receipt of such cancellations, action agencies immediately shall assume all-clear status.

A cancellation of a watch or warning must not be confused with an all-clear message. A watch will be cancelled when HO determines that a wave has not been generated. A warning will be cancelled if it is issued on the basis of erroneous data or if HO determines from subsequent information that only an insignificant wave has been generated. In addition, a warning may be cancelled on a selective basis when a significant wave that has been generated clearly poses no threat to one or more of the areas HO warns, either because of intervening continents or islands which screen them or because the orientation of the generating area causes the tsunami to be directed away from these areas.

6.5 SAMPLE DISSEMINATION MESSAGES

6.5.1 Watch sample

FM HONOLULU OBSERVATORY
TO (Dissemination Agency)
HONOLULU BULLETIN NUMBER 001
TSUNAMI WATCH
A SEVERE EARTHQUAKE HAS OCCURRED AT (time) Z (date)
PRELIMINARY LOCATION (latitude) (longitude)
VICINITY OF
PRELIMINARY MAGNITUDE
IT IS NOT KNOWN REPEAT NOT KNOWN AT THIS TIME THAT A
PACIFIC-WIDE TSUNAMI HAS BEEN GENERATED. STATIONS
AT AND
HAVE BEEN QUERIED. YOU WILL BE KEPT INFORMED AS
FURTHER INFORMATION BECOMES AVAILABLE. IF A
TSUNAMI HAS BEEN GENERATED ETA INFORMATION IS AS FOLLOWS:

NOTE: All messages issued to the dissemination agencies in connection with an earthquake are identified sequentially as Honolulu Bulletin Number 1, Honolulu Bulletin Number 2, etc. ETA information for any tide station that would be struck by the tsunami within 2 hours of the release of the watch message must be included. Complete ETA information can be given in a second bulletin that repeats all the preceding information. If confirmation of the existence of a tsunani is received before the second bulletin is issued, the ETA information will be given in the warning message. All watch messages will include the earthquake epicenter, time of occurrence, and preliminary magnitude.

6.5.2 Warning sample

FM HONOLULU OBSERVATORY
TO (Dissemination Agency)
HONOLULU BULLETIN NUMBER
TSUNAMI WARNING
A SEVERE EARTHQUAKE HAS OCCURRED AT (time) Z (date)
PRELIMINARY LOCATION (latitude) (longitude)
VICINITY OF
PRELIMINARY MAGNITUDE

A TSUNAMI HAS BEEN GENERATED THAT IS SPREADING OVER THE PACIFIC OCEAN.
THE WAVE HEIGHTS CANNOT BE PREDICTED. HOWEVER THIS TSUNAMI COULD CAUSE
GREAT DAMAGE TO ALL COASTS AND ISLANDS IN THE PACIFIC AREA. THE
TSUNAMI IS A SERIES OF WAVES AND MAY BE DANGEROUS FOR SEVERAL HOURS
AFTER THE INITIAL WAVE ARRIVAL AT ANY PARTICULAR PLACE. WAVE HEIGHTS
/THESE ARE NOT NECESSARILY MAXIMUMS/HAVE BEEN REPORTED TO HO AS FOLLOWS:
(place) (height). ETA INFORMATION IS AS FOLLOWS:

NOTE: If all ETAs have not been computed by the time the existence of a tsunami is confirmed, those already computed will be included in the warning, and the warning will be repeated with complete ETA information as soon as it is available. Research programs are attempting to find ways to predict tsunami wave heights and propagation patterns. When and if the programs are successful, the area of the Pacific over which the tsunami is expected to spread and be dangerous will be identified, the range of wave heights will be given, and the order of magnitude of expected danage will be stated. Wave heights, normally measured from trough to crest or crest to trough, will be reported in centimeters and will be given in four figures. For example, a wave of 107 centimeters would be reported as 0107 cm.

6.5.3 Supplenentary warning sample

FM HONOLULU OBSERVATORY
TO (Dissemination Agency)
HONOLULU BULLETIN NUMBER
TSUNAMI WARNING SUPPLEMENT
REF OUR BULLETIN NUMBER (date-time group).

THE SEVERE EARTHQUAKE THAT OCCURRED AT (time) Z (date)
PRELIMINARY LOCATION (latitude) (longitude)
VICINITY OF PRELIMINARY
MAGNITUDE HAS GENERATED
A TSUNAMI THAT IS SPREADING OVER THE PACIFIC OCEAN.
WAVE HEIGHTS/THESE ARE NOT NECESSARILY MAXIMUMS/HAVE
BEEN REPORTED TO HO AS FOLLOWS: (place) (height)
DAMAGE HAS BEEN REPORTED FROM

6.5.4 All-clear sample (issued only when significant waves occur)

FM HONOLULU OBSERVATORY
TO (Dissemination Agency)
HONOLULU BULLETIN NUMBER
TSUNAMI WARNING SUPPLEMENT
REF OUR BULLETIN NUMBER (date-time group).
ALL AREAS SHOULD ASSUME ALL CLEAR WHEN FREE FROM DAMAGING
WAVES FOR TWO HOURS OR TWO HOURS AFTER ETA IF NO MAJOR
WAVES ARE RECORDED. DANGER TO NAVIGATION DUE TO RAPID
CURRENT FLUCTUATIONS IN CHANNELS AND HARBORS MAY CONTINUE
FOR SEVERAL ADDITIONAL HOURS. ALL CLEAR WAS ISSUED FOR
(place) AT (time) Z.

NOTE: Information contained in the sample messages in topics 6.5.3 and 6.5.4 may be combined. Additional information may be included as deemed advisable by HO. At present, HO issues all-clear messages in the cited general fashion. Determinations as to when the danger has passed in specific local areas are made by the various dissemination agencies and local government authorities based on wave action experienced and the previous ETA information provided by HO. Of course, HO will render any aid and advice possible. All-clear notifications from responsible local organizations will be relayed to dissemination agencies by HO when available.

6.5.5 Cancellation of watches or warnings

FM HONOLULU OBSERVATORY
TO (Dissemination Agency)
HONOLULU BULLETIN NUMBER
REF OUR BULLETIN NUMBER (date-time group)
A SEVERE EARTHQUAKE OCCURRED AT (time) Z (date)
PRELIMINARY LOCATION (latitude) (longitude)
VICINITY OF PRELIMINARY
MAGNITUDE . NEGATIVE TSUNAMI
REPORTS HAVE BEEN RECEIVED FROM
NO TSUNAMI HAS BEEN GENERATED. (Or: REPORTS FROM AND
INDICATE THAT ONLY A MINOR TSUNAMI HAS BEEN GENERATED.
NO DANGER IS EXPECTED.) WATCH (WARNING) STATUS IS
CANCELLED. ALL AGENCIES ASSUME ALL CLEAR UPON RECEIPT
OF THIS MESSAGE. INVESTIGATION CLOSED BY HONOLULU
OBSERVATORY AT (time) Z.

6.6 EVALUATION OF SYSTEM OPERATION

For the National Weather Service to evaluate the operation of the warning system, all dissemination agencies must submit logs covering periods of tsunami emergencies.

These logs should include at least the following information: text and time of receipt of all bulletins received; summary of actions taken by the agency and the time they were taken; response of the public to warnings, including details on the effectiveness of any evacuations ordered; estimates of damage and the number of casualties if damaging waves occurred; representative maximum wave heights above mean sea level; and arrival times of initial and maximum wave heights. Logs should be mailed to the Associate Director, Meteorology and Oceanography, National Weather Service, National Oceanic and Atmospheric Administration, Silver Spring, Maryland 20910, as soon as possible after each occurrence.

SECTION VII. COMMUNICATION METHODS FOR SEISMOLOGICAL STATIONS AND TIDE STATIONS

7.1 THE HONOLULU OBSERVATORY (CONTROL CENTER OF THE WARNING SYSTEM), HAWAII

(1) Mail Address

Director, Tsunami Warning Center
Honolulu Observatory
NOAA, National Weather Service
91-270 Fort Weaver Road
Ewa Beach, Oahu, Hawaii 96706

Telephones: 474-9191, 689-8207, 689-8622

(2) Station Designator

HONOLULU OBSERVATORY
HAWAII

(3) Methods of Communication

Messages from HO to the seismological stations and tide stations listed in topics 7.2 and 7.3, respectively, will be handled (in reverse order) over the channels listed therein for each station. The relative preference of available methods will be the same as that in topics 7.2 and 7.3, except as modified by experience and/or local conditions. Messages addressed to HO are passed to HO by telephone or teletypewriter from the Navy or FAA communication activity on Oahu and then confirmed by teletypewriter if so requested by HO.

NOTES AND CHANGES:

7.2 SEISMOLOGICAL STATIONS

7.2.1 Adak, Alaska

(1) Mail Address

Chief
Adak Observatory
NOAA, National Weather Service
P.O. Box 51, U.S. Naval Station
FPO Seattle, Washington 98791

(2) Station Designator

ADAK OBSERVATORY
ALASKA

Telephones: 907-579-3250, 579-2216, *576-3252, *579-3254, *579-3253

*Call in order listed after normal working hours (0730-1600 local time Monday through Friday.

(3) Methods of Communication

Primary: Telephone or courier to CommCenter NavSta, Adak; thence via DCS to HO.

First Alternate: Telemeter to Palmer Observatory; thence teletypewriter via FAA communication network to HO.

NOTES AND CHANGES:

Adak Observatory is included in the Alaska Tsunami Warning System, and a portion of its data is telemetered to Palmer Observatory.

7.2.2 Apia, Western Samoa

(1) Mail Address

Observer-In-Charge
Apia Observatory
P.O. Box 52
Apia, Western Samoa

(2) Station Designator

APIA OBSERVATORY

Telephones: Observatory, 220-2 rings; OIC, home or office, 220-3 rings

(3) Method of Communication

Primary: Telephone to Apia Radio or Radiotelephone to CAA Faleolo Airport; thence radiotelegraph to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

The observatory has a 20-hour (1615-1215Z) watch. OIC responds to messages for data 0115 to 0515 (local time, 165W; 1215-1615Z) from his observatory home. Commercial telephone calls can be placed to Apia 0900-1600 (local time, 165W; 2000-0300Z).

7.2.3 Berkeley, California

(1) Mail Address

Seismographic Station
University of California
Berkeley, California 94720

(2) Station Designator

BERKELEY OBSERVATORY

Telephones: *415-642-3977; +Dr. B. A. Bolt, 415-843-7935; +Dr. T. V. McEvilly, 415-549-0967

*During normal working hours
+After normal working hours

(3) Methods of Communication

Primary: Telephone to FAA IATSC, San Francisco; thence via FAA communication network to HO.

First Alternate: Telephone to CommCenter at NavCommSta, San Francisco; thence via DCS to HO.

NOTES AND CHANGES:

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.2.4 College (Fairbanks), Alaska

(1) Mail Address

Chief
College Observatory
U.S. Geological Survey
Yukon Drive on West Ridge
Fairbanks, Alaska 99701

(2) Station Designator

COLLEGE OBSERVATORY

Telephones: 907-479-7626; ATSS 353-6103; Mr. J. Townshend, 479-2898, home

(3) Methods of Communication

Primary: Telephone to FAA Station, Fairbanks; thence via FAA communication network to HO.

First Alternate: Telephone to CommCenter *RCA ALASCOM, Fairbanks; thence teletypewriter to Joint CommCenter, Elmendorf AFB; thence via DCS to HO.

*RCA ALASCOM, Fairbanks, is manned only from 1900 to 0400Z Mondays through Saturday and 2300 to 0100Z Sundays and holidays. In the event alternate must be used after these hours, telephone directly to Joint CommCenter, Elmendorf, AFB.

NOTES AND CHANGES:

7.2.5 Easter Island

(1) Mail Address

Chief
Easter Island Seismograph Station
FACH
Isla de Pascua, Chile

(2) Station Designator

EASTER ISLAND OBSERVATORY

(3) Method of Communication

Primary: Radio/telephone to the Departamento de Geofisica, University of Chile, Santiago; thence radio/telephone to NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HQ.

NOTES AND CHANGES:

7.2.6 Guam, Mariana Islands

(1) Mail Address

Chief
Guam Observatory
U.S. Geological Survey
Box 8001, M.O.U. #3
Agana, Guam 96910

(2) Station Designator

GUAM OBSERVATORY
MARIANA ISLANDS

Telephones: Office, 355-5259; Mr. Jacobs, 746-2948; Mr. Hattori, 746-1716

(3) Methods of Communication

Primary: Telephone/messenger to NavCommSta, Guam; thence via DCS to HO.

First Alternate: Telephone/messenger to FAA Station, Guam; thence via FAA communication network to HO.

NOTE: In accordance with existing arrangements, all reports (excluding TSUNAMI DUMMY messages) sent to HO from Guam Observatory will be sent simultaneously to Tokyo Weather Central, Fuchu Air Station, Japan, and the Japanese Meteorological Agency, Tokyo, via any convenient DOD communication channel and with appropriate DOD precedence.

NOTES AND CHANGES:

7.2.7 Hong Kong

(1) Mail Address

Director
Royal Observatory
Hong Kong

Telephone: 677-171

(2) Station Designator

OBSERVATORY HONG KONG

(3) Methods of Communication

Primary: Teletypewriter via WMO circuits to JMA International Telecommunications Center, Tokyo, Japan; thence teletypewriter via satellite to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Teletypewriter to Hong Kong AFTN Center; thence teletypewriter to AFTN, Tokyo; thence teletypewriter via satellite to FAA IATSC, Honolulu; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

7.2.8 Instituto Geofisico del Peru

(1) Mail Address

Jefe del Servicio Sismologico
Instituto Geofisico del Peru
Apartado 3747
Lima, Peru

(Located at: Avenida Arequipa 701)

Telephones: 321759, 247722, 617274

If no answer, call the following in order: Leonides Ocola, 255949; Gonzalo Fernandez, 616789; and Mateo Casaverde, 235498.

(2) Station Designator

MAREMOTO

(3) Method of Communication

Primary: Telephone to Corpac, Lima, Peru; thence radioteletypewriter to FAA Station, Balboa, Canal Zone; thence via FAA communication network to HO.

NOTES AND CHANGES:

The Instituto Geofisico del Peru operates seismograph stations at Huancayo and Nana and a short-period vertical seismometer with a visual recorder at Lima.

7.2.9 Japan Meteorological Agency, Tokyo

(1) Mail Address

Director-General
Japan Meteorological Agency
Ote-machi, Chiyoda-ku
Tokyo, Japan

Telephone: 211-7953

Commander
20th Weather Squadron (AWC)
APO San Francisco, California 96525

Telephones: 44505 or 44227

(2) Station Designator

JMA TOKYO

ASIAN WEATHER CENTRAL
FUCHU AIR STATION
JAPAN

(3) Methods of Communication

Primary: Teletypewriter via satellite to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Teletypewriter to AFCS Weather Relay and Broadcast Center, Fuchu Air Station; thence via DCS to HO.

NOTES AND CHANGES:

JMA Seismological Section is the disseminating agency in Japan through which warnings and reports to and from Matsushiro, Hachinohe, Kushiro, and Shimizu (Tosa) are handled.

7.2.10 La Plata, Argentina

(1) Mail Address

Director
Observatorio Astronomico
Universidad Nacional de La Plata
La Plata, Republic of Argentina

(2) Station Designator

LA PLATA OBSERVATORY

(3) Methods of Communication

Primary: Telephone to Direccion General de Circulacion Aerea y Aerodromos; thence teletypewriter via Aeronautical Fixed Telecommunications Network to AFTN Switch, Kansas City, Kansas; thence teletypewriter via FAA communication network to HO.

First Alternate: Telephone to the Department of Communications, National Meteorological Service, Buenos Aires; thence teletypewriter to National Weather Service, Suitland, Maryland; thence teletypewriter via FAA communication network to HO.

NOTES AND CHANGES:

7.2.11 Manila Observatory, Quezon City, Philippine Islands

(1) Mail Address

Reverend Victor Badillo, S.J.
Director, Manila Observatory
Ateneo de Manila University
P.O. Box 1231
Manila, Republic of the Philippines

Telephone: 99-94-17

(2) Station Designator

MANILA OBSERVATORY

(3) Methods of Communication

Primary: Telephone to Philippine CAA CommCenter, Manila; thence cable teletypewriter to FAA IATSC Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Telephone to U.S. Military Sea Transportation Service, Manila; thence via DCS to HO.

NOTES AND CHANGES:

7.2.12 Nandi, Fiji

(1) Mail Address

The Senior Meteorologist
Meteorological Office
P.O. Box 198
Nandi Airport
FIJI

(2) Station Designator

NANDI MET

(3) Methods of Communication

Primary: Telephone/courier to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Telephone/courier to AeroCommSta, Nandi; thence radioteletypewriter to FAA IFSS, Pago Pago, American Samoa; thence via FAA communication network to HO.

NOTES AND CHANGES:

7.2.13 Newport, Washington

(1) Mail Address

Chief
Newport Geophysical Observatory
U.S. Geological Survey
Route 4, Box 56A
Newport, Washington 99156

Telephone: 509-447-3195

(2) Station Designator

NEWPORT OBSERVATORY

(3) Method of Communication

Primary: Telephone to FAA IATSC, San Francisco, California; thence via FAA communication network to HO.

NOTES AND CHANGES:

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.2.14 Noumea, New Caledonia

(1) Mail Address

Monsieur le Directeur de l'ORSTOM
Boite Postale 4
Noumea, New Caledonia

(2) Station Designator

METEO NOUMEA

(3) Method of Communication

Primary: Telephone from ORSTOM to Meteo National Noumea; thence teletypewriter to the AFTN station Tontouta; thence radioteletypewriter to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypwriter telephone to HO.

NOTES AND CHANGES:

7.2.15 Palmer, Alaska

(1) Mail Address

Chief
Palmer Observatory
NOAA, National Weather Service
P.O. Box Y
Palmer, Alaska 99645

(2) Station Designator

PALMER OBSERVATORY

Telephones: 907-745-4212, 745-3175, AUTOVON 836-1212

(3) Methods of Communication

Primary: Telephone, AUTOVON or commercial, to HO.

First Alternate: Teletypewriter via FAA communication network to HO.

(4) Methods of Communication to JMA

Primary: Teletypewriter to FAA IFSS Anchorage; thence via satellite to Tokyo AFTAX; thence to JMA International Telecommunication Center, Tokyo, Japan; thence courier to JMA Seismic Room.

First Alternate: Teletypewriter to FAA Alaska Regional Headquarters, Anchorage; thence via DCS to AFCS Weather Relay and Broadcast Center, Fuchu Air Station, Japan; thence teletypewriter to JMA International Telecommunication Center, Tokyo; thence courier to JMA Seismic Room.

NOTES AND CHANGES:

Palmer Observatory, headquarters of the Alaska Regional Tsunami Warning System, will supply seismic phase readings and tide-gage readings to HO from ARTWS network stations as available and other duties permit. Palmer will also provide HO preliminary epicenter and magnitude determinations for large Pacific earthquakes.

7.2.16 Papeete, Tahiti

(1) Mail Address

M. le Directeur du Laboratoire
de Geophysique
B.P. 640, Route de Pamatai
Papeete, Tahiti

(2) Station Designator

CENTEXPACI EM/OPS PAPEETE

(3) Method of Communication

Primary: Telephone to CENTEXPACI, Papeete; thence teletypewriter to AVIACIV, Papeete; thence radioteletypewriter to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence telephone/ teletypewriter to HO.

NOTES AND CHANGES:

7.2.17 Pasadena, California

(1) Mail Address

Seismological Laboratory
Bin 2, Arroyo Annex
Pasadena, California 91109

(2) Station Designator

PASADENA OBSERVATORY

Telephones: *213-795-8806; *681-2396; +795-8806; +795-1200 (unlisted)

*During working hours, Monday through Friday
+After normal working hours

If no answer at the laboratory on these telephones, try the following in order:
Gladys Engen, 213-795-4671;
John Nordquist, 213-794-1494;
James H. Whitcomb, 213-795-5593;
Clarence Allen, 213-795-6705;
Tom Hanks, 213-792-3673; and
Don Anderson (Director, Seismological Laboratory), 213-797-7426.

(3) Methods of Communication

Primary: Telephone to FAA IATSC, San Francisco; thence via FAA communication network to HO.

First Alternate: Telephone to CommCenter, Naval Station, Long Beach; thence via DCS to HO.

NOTES AND CHANGES:

Correct information may be given out by persons not listed above.

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.2.18 Petropavlovsk, U.S.S.R.

(1) Mail Address

Prof. S. L. Soloviev
Sakhalin Complex Scientific Research Institute
Academy of Sciences of the U.S.S.R.
Novoalexandrovsk
Sakhalin, 6 94050, U.S.S.R.

(2) Station Designator

PETROPAVLOVSK OBSERVATORY

(3) Method of Communication

Primary: Transmit via internal U.S.S.R. channels to Tsunami Warning Center at Kharbarovsk Hydrometeorological Observatory; thence teletypewriter via WMO main regional circuit to JMA, Tokyo, Japan; thence teletypewriter via satellite to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

7.2.19 Santiago, Chile

(1) Mail Address

Mr. Edgar Kausel, Director
Departamento de Geofisica
Universidad de Chile
Casilla 2777
Santiago, Chile

(2) Station Designator

SANTIAGO OBSERVATORY

Telephones: *68686 or +66563

*During normal working hours (0830-1730)
+24 hours a day

If no answer at the Departamento on these telephones, try Mr. Edgar Kausel, 288598.

(3) Methods of Communication

Primary: Radio/telephone to NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HO.

First Alternate*: Telephone to All America Cables communication station in Santiago, Chile; thence radioteletypewriter to All America Cables, Balboa, Canal Zone; thence direct landline toCommCenter, NavCommSta, Balboa; thence via DCS to HO.

*When using the first alternate, the station designator is SEISMOCHILE SANTIAGO.

NOTES AND CHANGES:

7.2.20 Tucson, Arizona

(1) Mail Address

Chief
Tucson Observatory
U.S. Geological Survey
7290 E. Tanque Verde Road
Tucson, Arizona 85715

Telephone: 602-792-6420

(2) Station Designator

TUCSON OBSERVATORY

(3) Methods of Communication

Primary: Telephone to FAA IATSC, San Francisco, California; thence via FAA communication network to HO.

First Alternate: Telephone to CommCenter, NavCommSta, San Francisco; thence via DCS to HO.

NOTES AND CHANGES:

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.2.21 Victoria, British Columbia, Canada

(1) Mail Address

Victoria Geophysical Observatory
R.R. 7
Victoria, British Columbia
Canada

(2) Station Designator

VICTORIA OBSERVATORY
B.C. CANADA

Telephones: *388-3208 and *388-3507 (unlisted); †Dr. W. G. Milne, 592-4661; †Mr. S. Smethurst, 479-2894

*During normal working hours
†After normal working hours

(3) Method of Communication

Primary: Telephone to COMM SQN Esquimalt, Victoria, British Columbia; thence teletypewriter to 1905 Comm Sq, McChord AFB, Washington; thence via DCS to HO

NOTES AND CHANGES:

7.2.22 Wellington, New Zealand

(1) Mail Address

Superintendent
Seismological Observatory
P.O. Box 8005
Wellington, New Zealand

(2) Station Designator

NEW ZEALAND CIVIL DEFENCE
FOR WELLINGTON OBSERVATORY

Telephones: *49-660, +49-663

*During normal working hours
+After normal working hours

Private telephones:

Dr. S. J. Gibowicz,	759-937
Mr. M. A. Lowry,	879-386
Mr. M. G. Muir,	793-989
Dr. R. D. Adams,	684-882
Mr. G. A. Eiby,	793-401

(3) Method of Communication

Primary: Telephone to Ministry of Civil Defence, Wellington; thence telephone to Civil Aviation CommCenter, Wellington; thence via Civil Aviation communications network to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

The observatory is manned from 8 a.m. to 5 p.m. (2000 to 0500Z) Monday to Friday. Calls at other times are transmitted to officers at their homes and should be restricted to major events in the Southwest Pacific or to occasions when temporary failure at another station makes the Wellington reading essential.

7.2.23 Yuzhno-Sakhalinsk, U.S.S.R.

(1) Mail Address

Prof. S. L. Soloviev
Sakhalin Complex Scientific
Research Institute
Academy of Sciences of the U.S.S.R.
Novoalexandrovsk
Sakhalin, 6 94050, U.S.S.R.

(2) Station Designator

YUZHNO-SAKHALINSK
OBSERVATORY

(3) Method of Communication

Primary: Transmit via internal U.S.S.R. channels to Tsunami Warning Center at Khabarovsk Hydrometeorological Observatory; thence teletypewriter via WMO main regional circuit to JMA, Tokyo, Japan; thence teletypewriter via satellite to PAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

7.3 TIDE STATIONS

7.3.1 Acajutla, El Salvador

(1) Mail Address

Director General
Instituto Geografico Nacional
"Ingeniero Pablo Arnoldo Guzman"
Apartado Postal No. 247
San Salvador, El Salvador

(2) Station Designator

ACAJUTLA TIDE OBSERVER
EL SALVADOR

Telephones: *255-721 or *255-900; Mr. Albert Holburn, 231-016; Ing. Jose Alberto Gonzalez G. (Director IGN), 255-864; Ing. Jose Bustamente H. (Chief, Vert. Con. IGN), 252-839.

*Operators at IGN, on duty 24 hours a day, will call the above persons in the order listed during working hours or at their home phones after working hours.

(3) Method of Communication

Primary: Radiotelephone via Comision Ejecutiva del Puerto de Acajutla system to Instituto Geografico Nacional using standard message form; thence telephone to CommCenter, U.S. Embassy, San Salvador; thence via Diplomatic Telecommunications Service to Fort Detrick, Maryland; thence via DCS to HO.

NOTES AND CHANGES:

7.3.2 Adak (Sweeper Cove), Alaska

(1) Mail Address

Chief
Adak Observatory
NOAA, National Weather Service
P.O. Box 51, U.S. Naval Station
FPO Seattle, Washington 98791

(2) Station Designator

ADAK OBSERVATORY
ALASKA

Telephones: 907-579-3250, 579-2216, *579-3252, *579-3254, *579-3253

*Call in the order listed after working hours (0730-1600 local time, Monday through Friday)

(3) Methods of Communication

Primary: Telephone or courier to CommCenter NavSta, Adak; thence via DCS to HO.

First Alternate: Telemeter to Palmer Observatory, Alaska; thence telephone, AUTOVON or commercial, to HO.

NOTES AND CHANGES:

The Adak Tide Station is a participant in the Alaska Regional Tsunami Warning System and continuously telemeters data to Palmer Observatory. (See appendix A.)

7.3.3 Antofagasta, Chile

(1) Mail Address

Director
Instituto Hidrografico de
la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via Chilean Naval System to the NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HO.

NOTES AND CHANGES:

7.3.4 Apia, Western Samoa

(1) Mail Address

Observer-In-Charge
Apia Observatory
P.O. Box 52
Apia, Western Samoa

(2) Station Designator

APIA OBSERVATORY

Telephones: Apia Observatory 220-2 rings; OIC (home or office), 220-3 rings

(3) Method of Communication

Primary: Telephone to Apia Radio or Radiotelephone to CAA Faleolo Airport; thence radiotelegraph to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HQ.

NOTES AND CHANGES:

There is a 20-hour (1615-1215Z) watch at the recorder site. OIC responds to messages for data 0115 to 0515 local time (165W), 1215-1615Z, from his observatory home. Commercial telephone calls can be placed to Apia 0900-1600 local time (165W), 2000-0300Z.

Tsunami reporting gage is a float-operated remote transmitter at Fire Pumphouse, Apia Harbor. Recorder is located at Apia Observatory.

7.3.5 Arica, Chile

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via Chilean Naval System to the NASA Minitrack Station, Peldehue, Chile; thence via NASA Communication Network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HQ.

NOTES AND CHANGES:

7.3.6 Attu (Massacre Bay), Alaska

(1) Mail Address

Attu Island Tide Observer
Commanding Officer
U.S. Coast Guard LORAN Station
FPO Seattle, Washington 98798

Telephone: 572-3000

(2) Station Designator

ATTU TIDE OBSERVER,
ALASKA

(3) Method of Communication

Primary: Courier to Coast Guard LORAN Station, Attu; thence via Coast Guard dedicated teletypewriter circuit to Seventeenth Coast Guard District Communication Center; thence via DCS to HQ.

NOTES AND CHANGES:

7.3.7 Balboa, Canal Zone

(1) Mail Address

Chief Hydrographer
Meteorological and Hydrographic Branch
Panama Canal Company
Balboa Heights, Canal Zone

(2) Station Designator

BALBOA TIDE OBSERVER
CANAL ZONE

Telephones:
*Balboa 52-7716, 7691, 3223
+Joseph A. Brady, 52-5163
+Joseph P. Corelli, 56-6612
+John B. Long, 52-2931
+W. B. Shaw, Balboa 2447

*During normal working hours (0715-1615 local time)
+After normal working hours and on Saturdays, Sundays, and holidays

(3) Method of Communication

Primary: Teletypewriter or telephone to CommCenter, NavCommSta, Balboa; thence via DCS to HO.

NOTES AND CHANGES:

7.3.8 Baltra Island, Galapagos Islands, Ecuador

(1) Mail Address

Director
Instituto Oceanografico de la Armada
Apartado 5940
Guayaquil, Ecuador

Telephone: 348-105

(2) Station Designator

GALAPAGOS TIDE OBSERVER

(3) Method of Communication

Primary: Radio to NASA Communication Station, Cotopaxi, Ecuador; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS AUTODIN to HO.

NOTES AND CHANGES:

7.3.9 Canton Island, South Pacific

(1) Mail Address

Marine Department
Global Association
APO San Francisco, California 96401

Telephone: 318

(2) Station Designator

CANTON ISLAND TIDE OBSERVER

(3) Methods of Communication

Primary: Telephone/courier to USAF CommCenter, Canton Island; thence radioteletypewriter to USAF CommCenter, Vandenberg AFB, California; thence via DCS to HO.

First Alternate: Telephone/courier to USAF CommCenter, Canton Island; thence radioteletypewriter via Meteorological Circuit to FAA IATSC Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

The tide gage is located about 150 meters inside the lagoon. A remote recorder is located in the Marine Department Office where an 8-hour watch is maintained. A telephone call may be placed by calling 622-4171 and requesting a radiotelephone call to Canton Island.

7.3.10 Crescent City, California

(1) Mail Address

Mr. William M. Parker
County Civil Defense Director
567 C Street
Crescent City, California 95531

Telephone: 707-464-4222

(2) Station Designator

CRESCENT CITY TIDE OBSERVER

(3) Methods of Communication

Primary: Telephone to FAA IATSC, San Francisco; thence via FAA communication network to HO.

First Alternate: Telephone to CommCenter at NavCommSta, San Francisco; thence via DCS to HO.

NOTES AND CHANGES:

The remote recorder is located in the Civil Defense Control Center collocated with the County Sheriff's Office.

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.3.11 Easter Island

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Radio via Chilean Naval Radio System to the Instituto Hidrografico de la Armada, Valparaiso; thence teletypewriter to NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HO.

NOTES AND CHANGES:

7.3.12 Fort Point, San Francisco, California

(1) Mail Address

Meteorologist in Charge
National Weather Service
1641 Resources Building
1416 9th Street
Sacramento, California 95814

Telephones: 916-449-2579, 449-2462

(2) Station Designator

NWS SACRAMENTO

(3) Method of Communication

Primary: Telemeter to National Weather Service Office, Sacramento; thence telephone to the FAA IATSC, San Francisco; thence via FAA communication network to HO.

NOTES AND CHANGES:

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.3.13 Guam, Mariana Islands

(1) Mail Address

Commanding Officer
(Attention: Code 30)
U.S. Naval Station, Box 154
FPO San Francisco, California 96630

(2) Station Designator

NAVSTA GUAM

Telephones: 339-6144 or 339-6141

(3) Methods of Communication

Primary: Telephone/messenger to MsgCen, NavSta, Guam; thence via DCS to HO.

First Alternate: Telephone/messenger to FAA Station, Guam; thence via FAA communication network to HO.

NOTES AND CHANGES:

The tide observer is the Port Operations Office, U.S. Naval Station, Apra Harbor, Guam. The remote tide recorder is located in the Port Operations Office (24-hour watch). A call may be made through Joint Overseas Switchboard (dial Navy 110) using IMMEDIATE precedence.

COMNAVMARIANAS should be included as an information addressee on all messages sent to NAVSTA GUAM.

7.3.14 Hachinohe, Japan

(1) Mail Address

Director-General
Japan Meteorological Agency
Ote-machi, Chiyoda-ku
Tokyo, Japan

Telephone: 211-7953

Commander
20th Weather Squadron (AWC)
APO San Francisco, California 96525

Telephones: 44505 or 44227

(2) Station Designator

JMA-TOKYO

ASIAN WEATHER CENTRAL
FUCHU AIR STATION
JAPAN

(3) Methods of Communication

Primary: Telegraph via JMA landline circuits to JMA Seismological Section; thence via courier to JMA International Telecommunication Center, Tokyo; thence teletypewriter via satellite to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Telegraph via JMA landline circuits to JMA Seismological Section; thence via courier to JMA International Telecommunication Center, Tokyo; thence teletypewriter to AFCS Weather Relay and Broadcast Center, Fuchu Air Station; thence via DCS to HO.

NOTES AND CHANGES:

All warnings and reports to and from Hachinohe are translated and edited by the JMA Seismological Section.

7.3.15 Hilo, Hawaii

(1) Mail Address

Administrator, Hawaii County
Civil Defense Agency
34A Rainbow Drive
Hilo, Hawaii 96720

Telephone: 808-935-3311

(2) Station Designator

HILO TIDE OBSERVER

(3) Methods of Communication

Primary: Teletypewriter or telephone from Hilo Police Department via Civil Defense network to Tsunami Advisor, Birkhimer Tunnel, Oahu; thence telephone to HO.

First Alternate: Telephone or courier to FAA Station, Hilo; thence via FAA communication network to HO.

NOTES AND CHANGES:

The tide observations are under contract with Stanley Y. Shibuya, employee of Young Brothers, Ltd. Immediate supervision is by M. O. Isherwood, Administrator, Hawaii County Civil Defense. The tide gage is located on Pier No. 2, Kuhio Bay, Hilo Harbor. The remote recorder is located at the Hilo Police Department, telephone number 935-3311.

7.3.16 Johnston Island, Pacific Ocean

(1) Mail Address

Official in Charge
NOAA, National Weather Service
APO San Francisco, California 96305

Telephone: 2310

DET 2, 1136 SASQ/DO*
APO San Francisco, California 96305

(2) Station Designator

JOHNSTON TIDE OBSERVER

DET 2, 1136 SASQ/DO

(3) Method of Communication

Primary: Telephone or teletypewriter to USAF CommCenter, Johnston Island; thence via DCS to HO.

NOTES AND CHANGES:

*This organization is to be an information addressee on all tsunami messages to Johnston Island.

The tide gage is located on the northeast end of the island, protected by a barrier reef. A telephone call may be made to the National Weather Service at Johnston Island through Joint Overseas Switchboard (dial Navy 110) using IMMEDIATE precedence.

7.3.17 Kodiak, Alaska

(1) Mail Address

Tide Observer
National Weather Service
Box 36, U.S. Coast Guard Base
Kodiak, Alaska 99615

Telephone: 907-487-3313

(2) Station Designator

KODIAK TIDE OBSERVER

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory; thence telephone, AUTOVON or commercial, to HO.

First Alternate: Teletypewriter via FAA Service B system to FAA IFSS, Anchorage; thence via FAA communication network to HO.

Second Alternate: Telephone/messenger to Message Center, Coast Guard CommSta, Kodiak; thence via DCS to HO.

NOTES AND CHANGES:

The Kodiak Tide Station is a participant in the Alaska Regional Tsunami Warning System and continuously telemeters data to Palmer Observatory. (See appendix A.)

7.3.18 Kushiro, Japan

(1) Mail Address

Director General
Japan Meteorological Agency
Ote-machi, Chiyoda-ku
Tokyo, Japan

Telephone: 211-7953

Commander
20th Weather Squadron (AWC)
APO San Francisco, California 96525

Telephones: 44505 or 44227

(2) Station Designator

JMA TOKYO

ASIAN WEATHER CENTRAL
FUCHU AIR STATION
JAPAN

(3) Methods of Communication

Primary: Telegraph via JMA landline circuits to JMA Seismological Section; thence via courier to JMA International Telecommunication Center, Tokyo; thence teletypewriter via satellite to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Telegraph via JMA landline circuits to JMA Seismological Section; thence via courier to JMA International Telecommunication Center, Tokyo; thence teletypewriter to AFCS Weather Relay and Broadcast Center, Fuchu Air Station; thence via DCS to HO.

NOTES AND CHANGES:

All warnings and reports to and from Kushiro are translated and edited by the JMA Seismological Section.

7.3.19 Kwajalein Atoll

(1) Mail Address

Meteorologist in Charge
National Weather Service Forecast
Office, Kwajalein Missile Range
Box 67
APO San Francisco, California 96555

Telephones: 83347 and 82136

(2) Station Designator

KWAJALEIN TIDE OBSERVER

(3) Methods of Communication

Primary: Teletypewriter via FAA communication network to HO.

First Alternate: Teletypewriter to KWAJ Missile Range CommCenter, Kwajalein; thence via DCS to HO.

NOTES AND CHANGES:

The remote recorder is located in the National Weather Service Forecast Office. A telephone call may be made to the Forecast Office through the Hawaii Switch (dial Navy 110) using IMMEDIATE precedence.

7.3.20 Langara Island, Canada

(1) Mail Address

Mr. Roy Coan
Telecommunications Area Manager
Ministry of Transport
Box 4000
Prince Rupert, British Columbia
Canada

Telephone: 604-627-1388
(TELEX: 047-8946)

(2) Station Designator

LANGARA TIDE OBSERVER
DUTY RADIO OPERATOR

(3) Method of Communication

Primary: Telemeter to Digby Island (Prince Rupert) communication station; thence via AFTN to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

7.3.21 La Punta, Callao, Peru

(1) Mail Address

Sr. Director
Direccion de Hydrografia y Navegacion
de la Marina
Ministerio de Marina
Saenz Pena No. 590 La Punta
Callao, Peru

(2) Station Designator

LA PUNTA TIDE OBSERVER

Telephones: 291974 and 299868
If no answer, try the following in the order listed: 299250, ext. 224, ext. 183

(3) Methods of Communication

Primary: Telephone to Corpac, Lima, Peru; thence radioteletypewriter to FAA Station, Balboa, Canal Zone; thence via FAA communication network to HO.

First Alternate: Telephone to All America Cables communication station in Lima; thence teletypewriter/telephone to All America Cables, Balboa; thence direct landline to CommCenter, NavCommSta, Balboa; thence via DCS to HO.

NOTES AND CHANGES:

7.3.22 Legaspi, Luzon, Philippine Islands

(1) Mail Address

Tide Observer
Legaspi City, Albay
Republic of the Philippines

(2) Station Designator

LEGASPI TIDE OBSERVER

Telephones: 394-1, 212-1 (residence)

(3) Methods of Communication

Primary: Telephone/messenger to Weather Bureau, Legaspi; thence teletypewriter/SSB radiophone to Weather Bureau Central, Manila; thence telephone/messenger to CAA CommCenter, Manila; thence cable teletypewriter to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Telephone/messenger to Philippine Constabulary Headquarters, Camp Regan, Legaspi; thence teletypewriter to 2d Philippine Constabulary Zone Headquarters; thence teletypewriter to Manila Zone Center (Armed Forces Philippines); thence teletypewriter to Headquarters, Philippine Navy; thence teletypewriter to U.S. Naval CommCenter, Sangley Point; thence via DCS to HO.

Second Alternate: Telephone/messenger to *CAA CommSta, Legaspi; thence radiotelegraph to CAA CommCenter, Manila; thence cable teletypewriter to FAA IATSC, Honolulu; thence teletypewriter/telephone to HO.

*CAA CommSta at Legaspi is closed daily from 1000 to 1800Z.

NOTES AND CHANGES:

7.3.23 Malakal Island, Palau Islands

(1) Mail Address

National Oceanic and Atmospheric Administration
National Weather Service Office
P.O. Box 520
Koror, West Caroline Islands 96940

(2) Station Designator

MALAKAL TIDE OBSERVER

(3) Methods of Communication

Primary: Telephone/teletypewriter to CommSta Koror, Palau Islands; thence radioteletypewriter to Trust Territory CommSta, Saipan, Mariana Islands; thence via FAA communication network to HO.

First Alternate: Telephone/teletypewriter to CommSta Koror; thence radioteletypewriter to Trust Territory CommSta, Saipan; thence via DCS to HO.

NOTES AND CHANGES:

The Weather Service Office is closed from 1500 to 2030Z during which the CommSta Koror has been instructed to telephone Mr. Niob Mesubed (SMT) at his residence.

7.3.24 Manzanillo, Colima, Mexico

(1) Mail Address

Direccion de Servicios de Puerto
Manzanillo, Colima, Mexico

Telephone: 5

(2) Station Designator

MANZANILLO TIDE OBSERVER

(3) Method of Communication

Primary: Radiotelegraph via Mexican Navy communication network to the Mexican Navy CommCenter, Mexico D.F.; thence telephone to RAMSA communication center, Mexico City Airport; thence via AFTN to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

7.3.25 Marsden Point, New Zealand

(1) Mail Address

The Harbour Superintendent
P.O. Box 269
Whangarei, New Zealand

(2) Station Designator

NEW ZEALAND CIVIL DEFENCE

Telephones: *Ruakaka 577; +Whangarei 87099 (office); +Whangarei 87729 (home)

*Marsden Point Control Tower, 24-hour watch
+Harbour Superintendent

(3) Method of Communication

Primary: Telephone to Ministry of Civil Defence, Wellington; thence telephone to Civil Aviation CommCenter, Wellington; thence via Civil Aviation communications network to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

Tsunami reporting normally is from a 12-inch remote recorder in the Harbour Control Tower. Remote transmitter is chain driven from float drum shaft of MUNRO Automatic Tide Gage on Marsden Point Wharf.

7.3.26 Midway Island, Pacific Ocean

(1) Mail Address

Commanding Officer
Naval Station, Box 16
FPO San Francisco, California 99614

(2) Station Designator

NAVSTA MIDWAY ISLAND

Telephone: 480

(3) Method of Communication

Primary: Teletypewriter via DCS to HO.

NOTES AND CHANGES:

The tide observer is the Communications Office, U.S. Naval Station, Midway. The remote recorder is located in the Communications Building. A telephone call to the Communications Office may be made through the Hawaii Switch (dial Navy 110) using IMMEDIATE precedence.

7.3.27 Minamitorishima (Marcus Island)

(1) Mail Address

Commanding Officer
USCG LORAN Station
FPO Seattle, Washington 98782

(2) Station Designator

MARCUS TIDE OBSERVER
MARCUS IS CP

(3) Methods of Communication

Primary: Radioteletypewriter to Coast Guard Radio Station, Kamiseya, Japan; thence via teletypewriter to Major Relay Station, NavCommSta, Yokosuka, Japan; thence via DCS to HO.

First Alternate: Telephone/courier to Japan Meteorological Agency Station, Minamitorishima (Marcus Island); thence radio to Japanese Meteorological Agency, Tokyo; thence teletypewriter via satellite to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

The tide gage is a deep-sea type (1,000 feet) exposed to the open sea on the northwest side of the island. The gage is under the service and maintenance of Deleco Electronics (Mr. James G. McNeil, AC Electronics-Defense Research Laboratories, 6767 Hollister Avenue, Goleta, California 93017, telephone 805-968-1011).

USCG Command at Kamiseya can be reached via AUTOVON: 224-7219, 224-7103, 224-7121, or 224-7231.

7.3.28 Moen Island, Truk Islands

(1) Mail Address

Official in Charge
National Weather Service, NOAA
Moen Island, Truk Islands
East Caroline Islands, Pacific 96942

(2) Station Designator

TRUK TIDE OBSERVER

(3) Methods of Communication

Primary: Telephone/teletypewriter to CommStaTruk, Truk Islands; thence radioteletypewriter to Trust Territory Communications Station, Saipan, Mariana Islands; thence via FAA communication network to HO.

First Alternate: Telephone/teletypewriter to CommStaTruk; thence radioteletypewriter to Trust Territory Communications Station, Saipan; thence via DCS to HO.

NOTES AND CHANGES:

The Weather Station is closed 1500-2000Z during which CommSta Truk will telephone the OIC, Mr. Maipi (telephone 691) or his assistant, Mr. Asten (telephone 794).

7.3.29 Nawiliwili, Kauai, Hawaii

(1) Mail Address

Official in Charge
NOAA, National Weather Service
R.R. 1, Box 171
Lihue, Hawaii 96766

Telephone: 245-3711

(2) Station Designator

NAWILIWILI TIDE OBSERVER

(3) Methods of Communication

Primary: Teletypewriter via FAA communication network to HO.

First Alternate: Telephone from National Weather Service to HO.

NOTES AND CHANGES:

The tide observer is the Harbor Master, State of Hawaii, Nawiliwili Harbor. The remote recorder is located in the National Weather Service Airport Station, Lihue, Kauai.

7.3.30 Noumea, New Caledonia

(1) Mail Address

Marine Nationale
Section Operations
Boite Postale 38
Noumea, New Caledonia

(2) Station Designator

NOUMEA TIDE OBSERVER

(3) Method of Communication

Primary: Courier from Mission Hydrographique en Nouvelle-Caledonie to PC/TRANS of the Navy, Noumea; thence teletypewriter to the Aeronautical fixed telecommunication AFTN station, Tontouta; thence radioteletypewriter to AeroComm Sta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

7.3.31 Pago Pago, Tutuila, American Samoa

(1) Mail Address

Official in Charge
National Weather Service Office
Pago Pago International Airport
Pago Pago, American Samoa 96920

Telephone: 688-9130

(2) Station Designator

PAGO PAGO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter to the FAA IFSS, Pago Pago; thence via FAA communication network to HO.

First Alternate: Teletypewriter via DCS to HO.

NOTES AND CHANGES:

The remote recorder is located in the National Weather Service Office. The tide gage is located in Pago Pago Harbor on the south coast of Tutuila Island. It is possible to place a commercial phone call to Pago Pago during the following times: Monday-Friday, 0900-2300 (Hawaii Standard Time); and Saturday and Sunday, 0900-1700 (Hawaii Standard Time).

7.3.32 Papeete, Tahiti

(1) Mail Address

M. le Directeur du Laboratoire
de Geophysique
B.P. 640, Route de Pamatai
Papeete, Tahiti

(2) Station Designator

CENTEXPACI EM/OPS PAPEETE

(3) Method of Communication

Primary: Telephone to CENTEXPACI, Papeete; thence teletypewriter to AVIACIV, Papeete; thence radioteletypewriter to AeroComSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence telephone/teletypewriter to HO.

NOTES AND CHANGES:

7.3.33 Puerto Montt, Chile

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via Chilean Naval System to the NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HQ.

NOTES AND CHANGES:

7.3.34 Puerto Williams, Chile

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via Chilean Naval System to the NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HQ.

NOTES AND CHANGES:

7.3.35 Punta Arenas, Chile

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via Chilean Naval System to the NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HO.

NOTES AND CHANGES:

7.3.36 Rikitea, Mangareva Island, Gambier Isles, French Polynesia

(1) Mail Address

M. le Directeur du Laboratoire
de Geophysique
B.P. 640, Route de Pamatai
Papeete, Tahiti

(2) Station Designator

CENTEXPACI EM/OPS
PAPEETE FOR/RIKITEA
TIDE OBSERVER

(3) Method of Communication

Primary: Radiotelephone to Laboratoire de Geophysique, Pamatai, Papeete; thence telephone to CENTEXPACI, Papeete; thence teletypewriter to AVIACIV, Papeete; thence radioteletypewriter to AeroComSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

The tide observer is the Chief of the Laboratoire de Geophysique Station, Rikitea. A bubbler tide-gage recorder is located in the radio room of Laboratoire de Geophysique Seismic Station, Rikitea, where a radio watch is maintained during working hours. After working hours, radio contact with the Laboratoire de Geophysique, Pamatai, Papeete, is established when a seismic event of sufficient strength activates a seismograph-controlled alarm in the home of the tide observer.

7.3.37 San Diego, California

(1) Mail Address

Meteorologist in Charge
Weather Service Office
2980 Pacific Highway
San Diego, California 92101

Telephone: 714-293-5678

(2) Station Designator

NWS SAN DIEGO

(3) Methods of Communication

Primary: Telephone to FAA IATSC, San Francisco; thence via FAA communication network to HO.

First Alternate: Telephone to Miramar Naval Station; thence via DCS to HO.

NOTES AND CHANGES:

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.3.38 Sand Point, Alaska

(1) Mail Address

Charles H. B. Maloney
Sand Point Tide Observer
c/o Wakefield Cannery
Wakefield Seafoods, Inc.
Sand Point, Alaska 99661

Telephone: 907-283-2311

(2) Station Designator

PALMER OBSERVATORY

(3) Method of Communication

Primary: Telemeter to Palmer Observatory; thence via AUTOVON to HO.

NOTES AND CHANGES:

The Sand Point Tide Station is a participant in the Alaska Regional Tsunami Warning System and continuously telemeters data to Palmer Observatory. (See appendix A.)

7.3.39 San Pedro, California

(1) Mail Address

San Pedro Tide Observer
Port of Los Angeles
255 West 5th Street
P.O. Box 151
San Pedro, California 90733

(2) Station Designator

SAN PEDRO TIDE OBSERVER

Telephones: 213-833-6629 (unlisted); SPruce 5-3231; 832-7241, ext. 292

(3) Methods of Communication

Primary: Telephone to FAA IATSC, San Francisco; thence via FAA communication network to HO.

First Alternate: Telephone to CommCenter at Naval Station, Long Beach; thence via DCS to HO.

NOTES AND CHANGES:

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

7.3.40 Seward, Alaska

(1) Mail Address

Mr. James Shingleton
P.O. Box 1023
Seward, Alaska 99664

Telephone: CA 4-5580

(2) Station Designator

PALMER OBSERVATORY

(3) Method of Communication

Primary: Telemeter to Palmer Observatory; thence telephone, AUTOVON or commercial, to HQ.

NOTES AND CHANGES:

The Seward Tide Station is a participant in the Alaska Regional Tsunami Warning System and continuously telemeters data to Palmer Observatory. (See appendix A.)

7.3.41 Shemya, Alaska

(1) Mail Address

Tide Observer
Air Weather Facility
Shemya Air Force Base
APO Seattle, Washington 98736

(2) Station Designator

PALMER OBSERVATORY

Telephones: 907-572-3555, 572-3577, AUTOVON 572-3555, or 572-3577

(3) Method of Communication

Primary: Telemeter to Palmer Observatory; thence telephone, AUTOVON or commercial, to HO.

NOTES AND CHANGES:

The Shemya Tide Station is a participant in the Alaska Regional Tsunami Warning System and continuously telemeters data to Palmer Observatory. (See appendix A.)

7.3.42 Shimizu (Tosa), Japan

(1) Mail Address

Director-General
Japan Meteorological Agency
Ote-machi, Chiyoda-ku
Tokyo, Japan

Telephone: 211-7954

Commander
20th Weather Squadron (AWC)
APO San Francisco, California 96525

Telephones: 44505 or 44227

(2) Station Designator

JMA TOKYO

ASIAN WEATHER CENTRAL
FUCHU AIR STATION, JAPAN

(3) Methods of Communication

Primary: Telegraph via JMA landline circuits to JMA Seismological Section; thence via courier to JMA International Telecommunication Center, Tokyo; thence teletypewriter via satellite to FAA IATCS, Honolulu, Hawaii; thence teletypewriter/telephone to HQ.

First Alternate: Telegraph via JMA landline circuits to JMA Seismological Section; thence via courier to JMA International Telecommunication Center; thence teletypewriter to AFCS Weather Relay and Broadcast Center, Fuchu Air Station; thence via DCS to HQ.

NOTES AND CHANGES:

All warnings and reports to and from Shimizu (Tosa) are translated and edited by the JMA Seismological Section.

7.3.43 Sitka, Alaska

(1) Mail Address

Chief
Sitka Observatory
U.S. Geological Survey
Box 158
Sitka, Alaska 99835

Telephones: 907-747-3332
If no answer, try 747-3922.

(2) Station Designator

SITKA OBSERVATORY

(3) Methods of Communication

Primary: Telephone to FAA Station, Sitka; thence via FAA communication network to HO.

First Alternate: Telemeter to Palmer Observatory; thence telephone, AUTOVON or commercial, to HO.

Second Alternate: Telephone to CommCenter *RCA ALASCOM, Sitka; thence via teletypewriter to OIC DCSTTYNET, CommCenter, Elmendorf AFB; thence via DCS to HO.

*RCA ALASCOM Sitka is manned during weekdays (1700-0200Z) and Saturdays (1700-0000Z) but is closed on Sundays and holidays.

NOTES AND CHANGES:

The Sitka Observatory is a participant in the Alaska Regional Tsunami Warning System and comtinuously telemeters data to Palmer Observatory. (See appendix A.)

When Sitka data are requested from Palmer Observatory, the request should carry the station designator "Palmer Observatory."

7.3.44 Socorro Island, Colima, Mexico

(1) Mail Address

Teniente Corbeta Cn.
Alfonso Jimenez Medina
Sector Naval Militar
Isla Socorro, Colima, Mexico

(2) Station Designator

SOCORRO TIDE OBSERVER

(3) Method of Communication

Primary: Radiotelegraph via Mexican Navy communication network to the Mexican Navy CommCenter, Mexico, D.F.; thence telephone to RAMSA communication center, Mexico City Airport; thence via AFTN to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

NOTES AND CHANGES:

7.3.45 Suva, Fiji

(1) Mail Address

The Harbour Master
P.O. Box 326
Suva, Fiji

Telephone: 24041

(2) Station Designator

SUVA TIDE OBSERVER

(3) Methods of Communication

Primary: Telephone to AeroCommSta, Nandi, Fiji; thence via Compac Cable to FAA IATSC, Honolulu, Hawaii; thence teletypewriter/telephone to HO.

First Alternate: Telephone to AeroCommSta, Nandi, Fiji; thence radioteletypewriter to FAA IFSS, Pago Pago, American Samoa; thence via FAA communication network to HO.

NOTES AND CHANGES:

Tsunami-reporting gage is a float-operated remote transmitter at Kings Wharf, Suva Harbour. Recorder is located in adjacent Watch Tower of Fiji Marine Harbour Master.

Duty Pilot has responsibility of replying to tsunami messages.

7.3.46 Talcahuano, Chile

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via Chilean Naval System to the NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HO.

NOTES AND CHANGES:

7.3.47 Tofino, British Columbia, Canada

(1) Mail Address

Coxswain
Tofino Lifeboat Station
Tofino, British Columbia
Canada

(2) Station Designator

TOFINO TIDE OBSERVER

Telephones: 604-725-3231
If no answer, try the following in the order listed: E. M. George, 604-725-3420; T. A. White, 604-725-3285; and W. Robertson, 604-725-3371.

(3) Method of Communication

Primary: Telephone/teletypewriter to COMM SQN Esquimalt, Victoria, British Columbia; thence teletypewriter to 1905 Comm Sq McChord AFB, Washington; thence via DCS to HO.

NOTES AND CHANGES:

The phone number to obtain the automatic readout from the tide gage is 604-725-3222.

7.3.48 Unalaska, Alaska

(1) Mail Address

Mr. Jonathan Knapp
Unalaska, Alaska 99685

Telephone: 907-581-1211

(2) Station Designator

UNALASKA TIDE OBSERVER

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory; thence telephone, AUTOVON or commercial, to HQ.

First Alternate: Telemeter/courier to CommCenter *RCA ALASCOM, Unalaska; thence teletypewriter to CommCenter RCA ALASCOM, Anchorage; thence telephone to FAA Regional Communications Control Center, Anchorage; thence via FAA communication network to HQ.

Second Alternate: Telemeter/courier to CommCenter *RCA ALASCOM, Unalaska; thence telephone to CommCenter, Elmendorf Air Force Base; thence via DCS to HQ.

*RCA ALASCOM, Unalaska, is manned during weekdays (1800-0200Z) and Saturdays, Sundays, and holidays (1900-2000Z).

NOTES AND CHANGES:

The Unalaska Tide Station is a participant in the Alaska Regional Tsunami Warning System and continuously telemeters data to Palmer Observatory. (See appendix A.)

When Unalaska data are requested from Palmer Observatory, the request should carry the station designator "Palmer Observatory."

7.3.49 Valparaiso, Chile

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via Chilean Naval System to the NASA Minitrack Station, Peldehue, Chile; thence via NASA communication network to the Goddard Space Flight Center, Greenbelt, Maryland; thence via DCS to HO.

NOTES AND CHANGES:

7.3.50 Wake Island, Pacific Ocean

(1) Mail Address

Meteorologist in Charge
National Weather Service Forecast
Office
P.O. Box 37
Wake Island, Central Pacific 96930

Telephone: 225

(2) Station Designator

WAKE TIDE OBSERVER

(3) Methods of Communication

Primary: Teletypewriter via FAA communication network to HO.

First Alternate: Telephone/courier to USAF ComCenter, Wake Island; thence via DCS to HO.

NOTES AND CHANGES:

The tide gage is located inside a protected small-boat harbor. The remote recorder is located in the Weather Service Forecast Office where a 24-hour watch is maintained. A telephone call may be placed through the Hawaii Switch (dial Navy 110) using IMMEDIATE precedence.

The first alternate method of communication is available Monday through Saturday, 0900-1800 Hawaiian Standard Time.

7.3.51 White Beach, Okinawa

(1) Mail Address

Officer in Charge
U.S. Naval Port Facilities
FPO Seattle, Washington 98770

(2) Station Designator

COMFLEACTS OKINAWA
NAVPORTCO BUCKNER

Telephones: AUTOVON 640-1110, ext. 22-243 or 22-244; AUTOVON 623-1110, ext. 22-240, 22-251, or 22-256

(3) Methods of Communication

Primary: Telephone to OOD, COMFLEACTS Okinawa, NAF, Naha; thence via DCS to HO.

First Alternate: Telephone via AUTOVON to Honolulu Observatory.

NOTES AND CHANGES:

A Bristol Dynamaster Recorder is located in the U.S. Naval Port Facilities Office where a 24-hour watch is maintained. Only a transmitter is on the Navy Pier.

7.3.52 Yakutat, Alaska

(1) Mail Address

Mr. Bill Bailey
Box 365
Yakutat, Alaska 99689

Telephone: 907-784-3377

(2) Station Designator

PALMER OBSERVATORY

(3) Method of Communication

Primary: Telemeter to Palmer Observatory; thence telephone, AUTOVON or commercial, to HO.

NOTES AND CHANGES:

The Yakutat Tide Station is a participant in the Alaska Regional Tsunami Warning System and continuously telemeters data to Honolulu Observatory. (See appendix A.)

7.3.53 Yap, West Caroline Islands

(1) Mail Address

Official in Charge
NOAA, National Weather Service
Office
Yap, West Caroline Islands 96943

Telephone: 230

(2) Station Designator

YAP TIDE OBSERVER

(3) Methods of Communication

Primary: Teletypewriter/telephone to Trust Territory CommCenter, Yap; thence radioteletypewriter to Trust Territory CommSta, Saipan; thence via FAA communication network to HO.

First Alternate: Teletypewriter/telephone to Trust Territory CommCenter, Yap; thence radioteletypewriter to Trust Territory CommSta, Saipan; thence via DCS to HO.

NOTES AND CHANGES:

The Weather Service Office is closed from 1500 to 2030Z during which the CommCenter will call the OIC, the Senior Met Tech, or the ET at his residence.

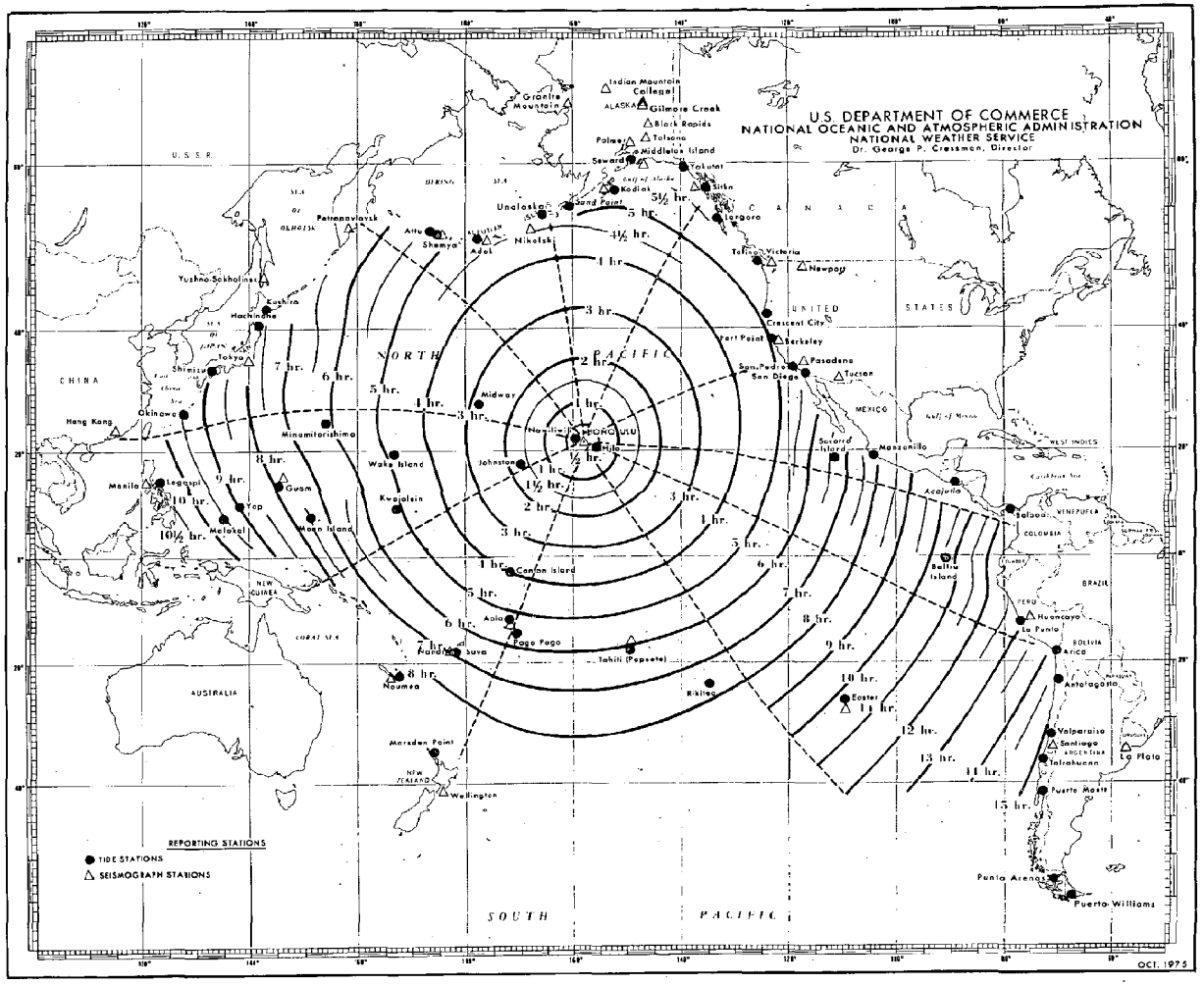

Figure 4.--Tsunami Warning System showing reporting stations and tsunami travel times to Honolulu, Hawaii

SECTION VIII. DISSEMINATION OF TSUNAMI WARNING INFORMATION

8.1 DISSEMINATION TO MILITARY AND CIVILIAN AGENCIES

Military and civilian agencies receiving tsunami watch and warning information from HO are:

1. Adak Observatory--by teletypewriter.
2. Commandant, Fourteenth Naval District--by telephone and/or teletypewriter.
3. Commander in Chief, Pacific--by telephone and/or teletypewriter.
4. Commander in Chief, Pacific Fleet--by teletypewriter.
5. Commander in Chief, U.S. Air Force Pacific--by teletypewriter.
6. Commander, U.S. Coast Guard Pacific Area, San Francisco--by teletypewriter.
7. Defense Civil Preparedness Agency, Region 7, Santa Rosa--by teletypewriter.
8. Defense Civil Preparedness Agency, Region 8, Bothell--by teletypewriter.
9. Defense Communications Agency, Pacific--by teletypewriter.
10. Reports and Evaluation Staff, FDAA, Washington, D.C.--by teletypewriter.
11. Director, National Weather Service, Silver Spring--by teletypewriter.
12. Director, Pacific Marine Center, National Ocean Survey, Seattle--by telephone.
13. Energy Research and Development Administration Nevada Operations Office--by teletypewriter.
14. FAA International Aeronautical Telecommunication Switching Center, Honolulu--by teletypewriter and/or telephone.
15. FAA Pacific-Asia Region, Honolulu--by teletypewriter.
16. Federal Disaster Assistance Administration, Region 9, San Francisco--by teletypewriter.
17. Federal Disaster Assistance Administration, Region 10, Seattle--by teletypewriter.
18. Fourteenth Coast Guard District, Honolulu--by teletypewriter.
19. Governor of American Samoa, Pago Pago, American Samoa--by teletypewriter.
20. National Earthquake Information Service, Golden, Colorado--by teletypewriter.
21. National Weather Service, Anchorage--by teletypewriter.
22. National Weather Service Duty Forecaster, Honolulu--by teletypewriter and/or telephone.
23. National Weather Service, Kwajalein--by teletypewriter.
24. National Weather Service Duty Forecaster, Los Angeles--by teletypewriter.
25. National Weather Service Duty Forecaster, Portland, Oregon--by teletypewriter.
26. National Weather Service Duty Forecaster, San Francisco--by teletypewriter.
27. National Weather Service Duty Forecaster, Seattle, Washington--by teletypewriter.
28. Sixth Weather Wing (MAC), Canton Island--by teletypewriter.
29. USCG Communications Station, Kodiak--by teletypewriter.
30. USCG LORAN Transmitting Station, Attu--by teletypewriter.
31. U.S. Naval Station, Guam--by teletypewriter.
32. U.S. Naval Station, Midway--by teletypewriter.
33. Alaska Disaster Office, Anchorage--by teletypewriter and/or NAWAS.
34. California Office of Emergency Services, Sacramento--by NAWAS.
35. Hawaii Civil Defense, Honolulu--by radio and/or telephone.
36. Hawaii Institute of Geophysics, Honolulu--by telephone.
37. Oregon Department of Emergency Services, Salem--by NAWAS.
38. Washington Department of Emergency Services, Olympia--by NAWAS.
39. Emergency Programme Coordinator, Province of British Columbia, Victoria, Canada--by teletypewriter.
40. Instituto Hidrografico de la Armada, Chile (also tide station reports and P-phase readings)--by teletypewriter.
41. Harbour Master, Suva, Fiji--by teletypewriter and/or telephone.
42. Royal Observatory, Hong Kong--by teletypewriter.

43. Japan Meteorological Agency, Tokyo (also tide station reports and P-phase readings)--by teletypewriter.
44. Chief Secretary, Nauru--by teletypewriter.
45. New Zealand Civil Defense, Wellington--by teletypewriter.
46. Papua and New Guinea Civil Defense, Port Moresby, Papua--by teletypewriter.
47. Republic of the Philippines Weather Bureau, Manila--by teletypewriter.
48. Papeete, Tahiti--by teletypewriter.
49. Central Weather Bureau, Taiwan--by teletypewriter.
50. Territory of New Caledonia, Noumea--by teletypewriter.
51. Hydrometeorological Observatory, Khabarovsk, U.S.S.R.--by teletypewriter.
52. Geophysical Observatory, Apia, Western Samoa--by teletypewriter.

8.2 COMMUNICATION METHODS FOR DISSEMINATION ORGANIZATIONS

8.2.1 Adak Observatory

(1) Mail Address

Chief, Adak Observatory
NOAA, National Weather Service
P.O. Box 51, U.S. Naval Station
FPO Seattle, Washington 98791

(2) Station Designator

ADAK OBSERVATORY AK

Telephones: 907-579-3250, 579-2216, *579-3252, *579-3254, *579-3253

*Call in the order listed after normal working hours (0730-1600 local time Monday through Friday)

(3) Method of Communication

Primary: Teletypewriter via DCS to CommCenter, NavSta, Adak, Alaska; thence telephone/courier to Adak Observatory.

NOTES AND CHANGES:

8.2.2 Commandant, Fourteenth Naval District

(1) Mail Address

(2) Station Designator

Commandant, Fourteenth Naval District
Box 110
FPO San Francisco, California 96610

COMFOURTEEN PEARL HARBOR HI

Telephone: 808-474-9201

(3) Method of Communication

Primary: Telephone to Commandant, Fourteenth Naval District. Teletypewriter confirmation copy via DCS to Commandant, Fourteenth Naval District.

NOTES AND CHANGES:

8.2.3 Commander in Chief, Pacific

(1) Mail Address

CINCPAC
FPO San Francisco, California 96610

(2) Station Designator

CINCPAC HONOLULU HI

Telephones: 808-477-6961, 477-6601

(3) Method of Communication

Primary: Telephone to Commander in Chief, Pacific. Teletypewriter confirmation copy via DCS to Commander in Chief, Pacific, Honolulu, Hawaii.

NOTES AND CHANGES:

8.2.4 Commander in Chief, Pacific Fleet

(1) Mail Address

CINCPACFLT
FPO San Francisco, California 96610

Telephone: 808-471-3971

(2) Station Designator

CINCPACFLT MAKALAPA HI

(3) Method of Communication

Primary: Teletypewriter via DCS to Commander in Chief, Pacific Fleet, Makalapa, Hawaii.

NOTES AND CHANGES:

8.2.5 Commander in Chief, U.S. Air Force Pacific

(1) Mail Address

CINCPACAF
APO San Francisco, California 96553

(2) Station Designator

CINCPACAF HICKAM AFB HI

Telephone: 808-449-9572

(3) Method of Communication

Primary: Teletypewriter via DCS to Commander in Chief, U.S. Air Force Pacific, Hickam AFB, Hawaii.

NOTES AND CHANGES:

8.2.6 Commander, U.S. Coast Guard Pacific Area

(1) Mail Address

Commander
U.S. Coast Guard Pacific Area
630 Sansome Street
San Francisco, California 94126

(2) Station Designator

COMPACAREA COGARD
SAN FRANCISCO CA

Telephones: 415-556-5500, 556-5501, 556-5502; AUTOVON 730-3821, 730-3822

(3) Method of Communication

Primary: Teletypewriter/telephone via DCS to Commander, U.S. Coast Guard Pacific Area.

NOTES AND CHANGES:

8.2.7 Defense Civil Preparedness Agency, Region 7

(1) Mail Address

Department of the Army, OSA
Defense Civil Preparedness Agency,
Region 7
P.O. Box 7287
Santa Rosa, California 95401

Telephone: 544-1330, ext. 211

(2) Station Designator

DCPA REGION SEVEN SANTA ROSA CA

(3) Method of Communication

Primary: Dual routing. Teletypewriter via DCS to DCPA Region 7, Santa Rosa. Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport, California; thence voice relay via NAWAS to DCPA Region 7, Santa Rosa.

NOTES AND CHANGES:

Earthquake Information Messages will be issued via NAWAS from Palmer Observatory, Palmer, Alaska (for all Pacific earthquakes of magnitude M_s 7.0 and larger), to OCD Region 7.

8.2.8 Defense Civil Preparedness Agency, Region 8

(1) Mail Address

Regional Director
Department of the Army
Defense Civil Preparedness Agency,
Region 8
Bothell, Washington 98011

Telephone: 486-0721

(2) Station Designator

DCPA REGION 8 BOTHELL WA

(3) Method of Communication

Primary: Dual routing. Teletypewriter via DCS to DCPA Region 8, Bothell. Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport; thence voice relay via NAWAS to DCPA Region 8, Bothell.

NOTES AND CHANGES:

If any tsunami watch or warning bulletins are received via teletypewriter by DCPA Region 8 before they are passed over NAWAS, DCPA Region 8 immediately will relay such bulletins over NAWAS to the States of Alaska, Washington, Oregon, and California.

Earthquake Information Messages will be issued via NAWAS from Palmer Observatory, Palmer, Alaska (on all Pacific earthquakes with a magnitude M_S 7.0 and larger), to OCD Region 8.

8.2.9 Defense Communications Agency, Pacific

(1) Mail Address

Commander
Defense Communications Agency,
Pacific
APO San Francisco, California 96515

(2) Station Designator

DCA-PAC KUNIA HI

Telephones: Navy 14072, 14523, 14210; Commercial 808-431-4072, 808-431-4523, 808-431-4210

(3) Methods of Communication

Primary: Teletypewriter/telephone via DCS to Chief, Defense Communications Agency, Pacific.

First Alternate: Telephone to ACOC, Defense Communications Agency, Pacific.

NOTES AND CHANGES:

8.2.10 Reports and Evaluation Staff, FDAA

(1) Mail Address (2) Station Designator

Reports and Evaluation Staff - BAR
Department of Housing and Urban
Development
Federal Disaster Assistance Administration
451 7th Street, S.W.
Washington, D.C. 20410

(3) Method of Communication

Primary: Teletypewriter via DCS to Special Facility Division, Government Preparedness Office, FDAA, Washington, D.C.

NOTES AND CHANGES:

8.2.11 Director, National Weather Service, NOAA

(1) Mail Address

Associate Director, Meteorology and Oceanography
National Weather Service
National Oceanic and Atmospheric Administration
Silver Spring, Maryland 20910

(2) Station Designator

NWS/SUITLAND MD/W161

Telephones: *301-427-7278; +Mark G. Spaeth, 774-4692; +Bertrand J. Thompson, 464-0917; +Richard H. Allbritton, 890-6398

*During normal working hours (0800-1630 local time Monday through Friday)
+Call in the order listed after normal working hours.

(3) Method of Communication

Primary: Teletypewriter via DCS to National Weather Service, Suitland, Maryland; thence telephone to National Weather Service, Silver Spring, Maryland, and teletypewriter confirmation copy via RAWARC circuit 23420.

NOTES AND CHANGES:

8.2.12 Director, Pacific Marine Center, NOS

(1) Mail Address

Director, Pacific Marine Center
NOAA, National Ocean Survey
1801 Fairview Avenue, East
Seattle, Washington 98102

Telephones: 206-442-7656, 442-7657

(2) Station Designator

NOAA/NOS SEATTLE WA

(3) Method of Communication

Primary: Teletypewriter via DCS to USACC-CONUS, Bothell, Washington; thence teletypewriter to Director, Pacific Marine Center, Seattle.

NOTES AND CHANGES:

8.2.13 Energy Research and Development Administration Nevada Operations Office

(1) Mail Address

U.S. Atomic Energy Commission
Nevada Operations Office
P.O. Box 14100
Las Vegas, Nevada 89114

(2) Station Designator

USERDA LAS VEGAS OPERATIONS

(3) Method of Communication

Primary: Teletypewriter via DCS to USERDA Las Vegas Operations.

NOTES AND CHANGES:

8.2.14 FAA International Aeronautical Telecommunications Switching Center, Honolulu

(1) Mail Address

FAA IATSC
Honolulu International Airport
Honolulu, Hawaii 96820

Telephone: 9-856-785

(2) Station Designator

FAA FSS HONOLULU

(3) Method of Communication

Primary: Telephone/teletypewriter to FAA Station, Honolulu.

NOTES AND CHANGES:

8.2.15 FAA Pacific-Asia Region Headquarters

(1) Mail Address

FAA Pacific-Asia Region Headquarters
Communications Center
FAA Building
1833 Kalakaua Avenue
Honolulu, Hawaii 96815

Telephone: 808-5465-452

(2) Station Designator

FAA PAC REGION

(3) Method of Communication

Primary: Telephone/teletypewriter to FAA Station, Honolulu; thence via FAA communication network to CommCenter, FAA Pacific Regional Headquarters, Honolulu.

NOTES AND CHANGES:

8.2.16 Federal Disaster Assistance Administration, Region 9

(1) Mail Address

Regional Director, Region 9
Federal Disaster Assistance
Administration
120 Montgomery Street
San Francisco, California 94104

Telephone: 415-556-8794

(2) Station Designator

FDAA REGION 9
SAN FRANCISCO CA

(3) Method of Communication

Primary: Dual routing. Teletypewriter via DCS to U.S.A. STRATCOM CONUS Facility, Santa Rosa, California; thence via Civil Defense National Teletypewriter System to FDAA Region 9, San Francisco. Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport; thence voice relay via FTS or commercial telephone to FDAA Region 9 during duty hours or U.S. Sixth Army, Presidio, San Francisco, during nonduty hours; thence via Civil Defense National Teletypewriter System to U.S.A. STRATCOM CONUS Facility, Santa Rosa.

NOTES AND CHANGES:

Earthquake Information Messages will be issued via NAWAS from Palmer Observatory, Palmer, Alaska (for all Pacific earthquakes of magnitude M_S 7.0 or larger), to FDAA Region 9.

The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

8.2.17 Federal Disaster Assistance Administration, Region 10

(1) Mail Address

Regional Director, Region 10
Federal Disaster Assistance
Administration
Room M-16, Arcade Building
1319 2d Avenue
Seattle, Washington 98101

Telephone: 206-442-1310
TWX: 910-444-1348

(2) Station Designator

FDDA REGION 10

(3) Method of Communication

Primary: Dual routing. Teletypewriter via DCS to DCPA Region 8, thence via telephone/TWX to FDAA Region 10, Seattle. Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport; thence voice relay via NAWAS to DCPA Region 8; thence telephone/TWX to FDAA Region 10, Seattle.

NOTES AND CHANGES:

Earthquake Information Messages will be issued via NAWAS from Palmer Observatory, Palmer, Alaska (on all Pacific earthquakes of magnitude M_s 7.0 and larger), to FDAA Region 10.

8.2.18 Fourteenth Coast Guard District

(1) Mail Address

Commander
14th Coast Guard District
677 Ala Moana
Honolulu, Hawaii 96813

Telephone: 808-533-2173

(2) Station Designator

CCGDFOURTEEN

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu; thence via FAA communication network to Commander, 14th Coast Guard District, Honolulu.

NOTES AND CHANGES:

8.2.19 Governor of American Samoa, Pago Pago, American Samoa

(1) Mail Address

Government of American Samoa
Office of the Governor
Pago Pago, American Samoa 96920

(2) Station Designator

GOVERNOR OF AMERICAN SAMOA

Telephones:
Governor, *633-4116, +633-4271
Lt. Governor, *633-4116, +633-5712
Director of Communication, *633-4111, +622-7111
Director of Port Administration, *633-4054, +688-7630

*Call in the order listed during normal working hours.
+Call in the order listed after normal working hours.

(3) Method of Communication

Primary: Teletypewriter via FAA communication network to FAA IFSS Pago Pago; thence teletypewriter/telephone to Governor of American Samoa, Pago Pago; thence telephone to Public Safety Commissioner.

NOTES AND CHANGES:

8.2.20 National Earthquake Information Service

(1) Mail Address

U.S. Geological Survey
National Earthquake Information
Center, D2
Denver Federal Center, Building 25
Denver, Colorado 80225

Telephones: 303-234-3994, 499-1000

(2) Station Designator

USGS/NEIS
BOULDER COLO

(3) Methods of Communication

Primary: Teletypewriter via DCS to the NOAA Space Environment Laboratory CommCenter, Boulder; thence telephone to NEIS duty officer.

First Alternate: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco, California; thence telephone to NEIS duty officer.

NOTES AND CHANGES:

The telephone numbers of the IATSC, San Francisco, are FTS 415-693-2594 and Commercial 415-877-3413. (Ask for supervisor.)

8.2.21 National Weather Service, Anchorage

(1) Mail Address

Operations Division (WXAP)
NOAA, National Weather Service
Alaska Region
632 Sixth Avenue
Anchorage, Alaska 99501

(2) Station Designator

NWS ANCHORAGE

Telephones: *272-5561, ext. 742; *ATSS 753-9203; +272-5594; +ATSS 753-9116

*During normal working hours (0730-1630 local time Monday through Friday)
+After normal working hours

(3) Methods of Communication

Primary: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to National Weather Service Regional Forecast Center, Anchorage.

First Alternate: Teletypewriter via DCS to FAA Alaska Region, Anchorage; thence teletypewriter to National Weather Service Regional Forecast Center, Anchorage.

NOTES AND CHANGES:

8.2.22 National Weather Service Duty Forecaster, Honolulu

(1) Mail Address

Operations Division
NOAA, National Weather Service
Pacific Region
P.O. Box 3650
Honolulu, Hawaii 96811

(2) Station Designator

NWS HONOLULU

Telephones: 845-2102, 841-4614, 841-3962

(3) Method of Communication

Primary: Telephone to Duty Forecaster, National Weather Service Forecast Office, Honolulu. Teletypewriter confirmation copy to FAA IATSC, Honolulu; thence via FAA communication network to Duty Forecaster, National Weather Service Forecast Office, Honolulu.

NOTES AND CHANGES:

8.2.23 National Weather Service, Kwajalein

(1) Mail Address

Meteorologist in Charge
National Weather Service Forecast
Office, Kwajalein Missile Range
P.O. Box 67
APO San Francisco, California 96555

Telephones: 83347 and 82136

(2) Station Designator

KWAJALEIN TIDE OBSERVER

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to Kwajalein National Weather Service Forecast Office.

First Alternate: Teletypewriter via DCS to Kwajalein Missile Range CommCenter; thence teletypewriter to Kwajalein National Weather Service Forecast Office.

NOTES AND CHANGES:

8.2.24 National Weather Service Duty Forecaster, Los Angeles

(1) Mail Address

Meteorologist in Charge
NOAA, Weather Service Forecast
Office
11102 Federal Building
11000 Wilshire Boulevard
Los Angeles, California 90024

Telephone: 213-824-7215

(2) Station Designator

NWS LOS ANGELES

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to WS Communication Center, Suitland, Maryland; thence via the high-speed channel to the Weather Message Switching Center, Kansas City, Kansas; thence via dedicated circuit to NWS Forecast Office, Los Angeles, California.

NOTES AND CHANGES:

8.2.25 National Weather Service Duty Forecaster, Portland, Oregon

(1) Mail Address

Meteorologist in Charge
NOAA, National Weather Service
Forecast Office
5420 N.E. Marine Drive
Portland, Oregon 97218

(2) Station Designator

NWS PORTLAND OR

Telephones: 503-281-6271, FTS 503-226-3691

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to NWS Communication Center, Suitland, Maryland; thence via the high-speed channel to the Weather Message Switching Center, Kansas City, Kansas; thence via dedicated circuit to NWS Forecast Office, Portland.

NOTES AND CHANGES:

8.2.26 National Weather Service Duty Forecaster, San Francisco

(1) Mail Address

Meteorologist in Charge
NOAA, Weather Service Forecast
Office
660 Price Avenue
Redwood City, California 94063

Telephones: 415-556-0484 or 415-556-0485

(2) Station Designator

NWS SAN FRANCISCO

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to WS Communication Center, Suitland, Maryland; thence via the high-speed channel to the Weather Message Switching Center, Kansas City, Kansas; thence via dedicated circuit to NWS Forecast Office, San Francisco, California.

NOTES AND CHANGES:

8.2.27 National Weather Service Duty Forecaster, Seattle, Washington

(1) Mail Address

Meteorologist in Charge
NOAA, National Weather Service
Forecast Office
1700 Westlake Avenue N.
Seattle, Washington 98109

(2) Station Designator

NWS SEATTLE

Telephones: 206-682-5300, FTS 206-442-5498

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to NWS Communication Center, Suitland, Maryland; thence via the high-speed channel to the Weather Message Switching Center, Kansas City, Kansas; thence via dedicated circuit to NWS Forecast Office, Seattle.

NOTES AND CHANGES:

8.2.28 Sixth Weather Wing (MAC), Canton Island

(1) Mail Address

Commander
OL-A Det 30, 6th Weather Wing (MAC)
APO San Francisco, California 96401

(2) Station Designator

OL-A DET 30 CANTON ISLAND

Telephone: 232, 239, or 227

(3) Methods of Communication

Primary: Teletypewriter via DCS to USAF CommCenter, Vandenberg AFB, California; thence radioteletypewriter to USAF CommCenter, Canton Island; thence telephone/courier to Commander, OL-A Det 30, 6th Weather Wing.

First Alternate: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence radioteletypewriter via meteorological circuit to USAF CommCenter, Canton Island; thence telephone/courier to Commander OL-A Det 30, 6th Weather Wing.

NOTES AND CHANGES:

8.2.29 USCG Communications Station, Kodiak

(1) Mail Address

Commanding Officer
USCG Communications Station
Box 17
FPO Seattle, Washington 98790

Telephone: 487-3342 or 487-5426

(2) Station Designator

COAST GUARD RADIO STA
KODIAK AK

(3) Methods of Communication

Primary: Teletypewriter via DCS to COGARD COMMSTA, Kodiak.

First Alternate: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IFSS, Anchorage, Alaska; thence teletypewriter via FAA Service B system to National Weather Service, Kodiak, Alaska; thence via telephone/messenger to COGARD COMMSTA, Kodiak.

Second Alternate: Telephone to COGARD COMMSTA, Kodiak.

NOTES AND CHANGES:

8.2.30 USCG LORAN Transmitting Station, Attu

(1) Mail Address

Commanding Officer
USCG LORAN Transmitting Station
FPO Seattle, Washington 98798

(2) Station Designator

ATTU TIDE OBSERVER AK

Telephone: 572-3000. (Ask for Attu, Alaska.)

(3) Method of Communication

Primary: Teletypewriter via DCS to Commander, Seventeenth Coast Guard District CommCenter; thence via Coast Guard dedicated teletypewriter circuit to Coast Guard LORAN Station, Attu.

NOTES AND CHANGES:

8.2.31 U.S. Naval Station, Guam

(1) Mail Address

Commanding Officer
(Attention: Code 30)
U.S. Naval Station
Box 154
FPO San Francisco, California 96630

Telephones: 339-6144, 339-6141

(2) Station Designator

NAVSTA GUAM

(3) Methods of Communication

Primary: Teletypewriter via DCS to Duty Officer, U.S. Naval Station, Guam, Mariana Islands.

First Alternate: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA Station, Guam; thence telephone/messenger to Duty Officer, U.S. Naval Station, Guam.

NOTES AND CHANGES:

COMNAVMARIANAS is to be included as an information addressee on all messages sent to NAVSTA GUAM.

8.2.32 U.S. Naval Station, Midway

(1) Mail Address

Commanding Officer
Naval Station, Box 16
FPO San Francisco, California 99614

(2) Station Designator

NAVSTA MIDWAY

(3) Method of Communication

Primary: Teletypewriter via DCS to Duty Officer, U.S. Naval Station, Midway.

NOTES AND CHANGES:

8.2.33 Alaska Disaster Office

(1) Mail Address

Director
Alaska Disaster Office
State of Alaska
1306 East 4th Avenue
Anchorage, Alaska 99501

(2) Station Designator

ALASKA DISASTER OFFICE

Telephone: 272-0594 or 753-0221 (AUTOVON)

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport, California; thence via NAWAS to the Alaska Disaster Office, Anchorage, during normal working hours and to the Alaska State Troopers, Anchorage, at other times.

First Alternate: Teletypewriter/telephone to FAA IATSC, Honolulu; thence via FAA communication network to FAA IFSS Anchorage (vice FAA IATSC San Francisco International Airport); thence via telephone to Director or Duty Officer, Alaska Disaster Office, Anchorage.

Second Alternate: Teletypewriter via DCS to FAA Alaska Region, Anchorage; thence via teletypewriter to FAA IFSS, Anchorage; thence via telephone to Director or Duty Officer, Alaska Disaster Office, Anchorage.

NOTES AND CHANGES:

Office hours are 1700-0130Z except weekends and holidays. After office hours, call the Alaska State Troopers at 272-1561 or 272-1522. State Troopers will notify the Alaska Disaster Office Duty Officer.

8.2.34 California Office of Emergency Services

(1) Mail Address

Director
California Office of Emergency Services
P.O. Box 9577
Sacramento, California 95823

Telephone: 916-421-4990
Teletypewriter: 910-367-0283

(2) Station Designator

CALIFORNIA CIVIL DEFENSE

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport, California; thence via NAWAS to California Office of Emergency Services, Sacramento.

First Alternate: Teletypewriter via DCS to DCPA Region 7, Santa Rosa, California; thence via NAWAS to California Office of Emergency Services, Sacramento.

Second Alternate: Teletypewriter via DCS to DCPA National Warning Center, Ent Air Force Base, Colorado Springs, Colorado; thence via NAWAS to California Office of Emergency Services, Sacramento. If DCS is unable to reach DCPA National Warning Center, it will telephone collect to California Office of Emergency Services, Sacramento.

NOTES AND CHANGES:

If the California Office of Emergency Services cannot be reached, the alternate is:

California Highway Patrol
Communications Center
Sacramento, California 95818

Telephones: 916-451-4960 or 445-2211

8.2.35 Hawaii Civil Defense

(1) Mail Address

State of Hawaii
Department of Defense
Civil Defense Division
Building 24 - Fort Ruger
Honolulu, Hawaii 96816

(2) Station Designator

(None)

Telephones: 944-3239, Communications Division, Honolulu Police Department (State Warning Point); 734-2161, Col. John Butchart, Vice Director, State Civil Defense

(3) Methods of Communication

Primary: Call via HAWAS to State Warning Point (SWP) and County Warning Points. After State Civil Defense Emergency Operating Center (EOC) is manned, telephone via private line to Civil Defense.

First Alternate: Telephone or radio via Civil Defense frequency to Civil Defense SWP. After Civil Defense EOC is manned, telephone via private line to Civil Defense.

NOTES AND CHANGES:

8.2.36 Hawaii Institute of Geophysics

(1) Mail Address (2) Station Designator

Joint Tsunami Research Effort JTRE
Institute of Geophysics-HIG 436
2525 Correa Road
Honolulu, Hawaii 96822

Telephones: (office) 944-8083, 948-8081; (homes) Dr. Gaylord Miller, 373-0033, and Ms. Ruth Brown, 946-8657

(3) Method of Communication

Primary: Telephone to Tsunami Division, Institute of Geophysics.

NOTES AND CHANGES:

8.2.37 Oregon Department of Emergency Services

(1) Mail Address

Administrator
Emergency Services Division
Oregon State Executive Department
Room 8, State Capitol Building
Salem, Oregon 97310

Telephone: 503-378-4124

Oregon State Police Patrol Station
State Street and Airport Road
Salem, Oregon 97310

Telephone: 503-378-3071

(2) Station Designator

OREGON DEPARTMENT OF
EMERGENCY SERVICES

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport, California; thence via NAWAS to the Department of Emergency Services during normal working hours and to the Oregon State Police, Salem, after normal working hours.

First Alternate: Teletypewriter via DCS to DCPA Region 8, Bothell, Washington; thence via NAWAS to the Oregon State Police, Salem.

Second Alternate: Teletypewriter via DCS to DCPA National Warning Center, Ent Air Force Base, Colorado Springs, Colorado; thence via NAWAS to the Oregon State Police, Salem. If DCS is unable to reach DCPA National Warning Center, they will telephone collect to the Emergency Services Division during normal working hours and to the Oregon State Police, Salem, after normal working hours.

NOTES AND CHANGES:

Normal working hours for the Department of Emergency Services are 0700-1700 weekdays. A duty officer is available at other times.

Earthquake Information Messages will be issued via NAWAS from Palmer Observatory, Palmer, Alaska (for all Pacific earthquakes of magnitude M_S 7.0 and larger), to the State of Oregon.

8.2.38 Washington Department of Emergency Services

(1) Mail Address

State of Washington
Department of Emergency Services
4220 Martin Way
Olympia, Washington 98504

Telephone: 206-753-5255

Washington State Patrol
Division of Communications
General Administration Building
Olympia, Washington 98504

Telephone: 206-753-4000

(2) Station Designator

WASHINGTON DEPARTMENT OF
EMERGENCY SERVICES

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport, California; thence via NAWAS to Washington State Patrol, Olympia.

First Alternate: Teletypewriter via DCS to DCPA Region 8, Bothell, Washington; thence via NAWAS to Washington State Patrol, Olympia.

Second Alternate: Teletypewriter via DCS to DCPA National Warning Center, Ent Air Force Base, Colorado Springs, Colorado; thence via NAWAS to Washington State Patrol, Olympia. If DCS is unable to reach DCPA National Warning Center, they will telephone collect to Washington State Patrol, Olympia.

NOTES AND CHANGES:

Earthquake Information Messages will be issued via NAWAS from Palmer Observatory, Palmer, Alaska (for all Pacific earthquakes of magnitude M_S 7.0 and larger), to the State of Washington.

8.2.39 Emergency Programme Coordinator, Province of British Columbia

(1) Mail Address

Mr. L. R. A. Hart
Coordinator, Provincial Emergency Programme
Parliament Buildings
Victoria, British Columbia V8V 1X4
Canada

Telephones: 387-6610, 387-3545

(2) Station Designator

BRITISH COLUMBIA EMERGENCY PROGRAMME

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IATSC, San Francisco International Airport, California; thence via NAWAS to DCPA Region Eight, Bothell, Washington; thence telephone collect to Royal Canadian Mounted Police, Victoria; thence telephone to Provincial Emergency Programme Coordinator, Victoria.

First Alternate: Teletypewriter via DCS to 1905 Comm Sq, McChord AFB, Washington; thence teletypewriter to Comm SQN Esquimalt, Victoria; thence telephone to the Provincial Emergency Programme Coordinator, Victoria.

NOTES AND CHANGES:

If any tsunami watch or warning bulletins are received via teletypewriter by DCPA Region Eight before they are passed over NAWAS, DCPA Region Eight immediately will relay such bulletins via telephone to the RCMP, Victoria.

8.2.40 Instituto Hidrografico de la Armada, Chile

(1) Mail Address

Director
Instituto Hidrografico
de la Armada
Casilla 324
Valparaiso, Chile

Telephones: Valparaiso 51056, 52007, 59014

(2) Station Designator

VALPARAISO TIDE OBSERVER

(3) Method of Communication

Primary: Teletypewriter via DCS to the Goddard Space Flight Center, Greenbelt, Maryland; thence via NASA communication network to NASA Minitrack Station, Peldehue, Chile; thence teletypewriter to Instituto Hidrografico de la Armada, Valparaiso.

NOTES AND CHANGES:

8.2.41 Harbour Master, Suva, Fiji

(1) Mail Address

The Harbour Master
P.O. Box 326
Suva, Fiji

Telephone: 24041

(2) Station Designator

SUVA TIDE OBSERVER

(3) Methods of Communication

Primary: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via Compac Cable to AeroCommSta, Nandi, Fiji; thence telephone to Harbour Master, Suva.

First Alternate: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to FAA IFSS, Pago Pago, American Samoa; thence radioteletypewriter to AeroCommSta, Nandi, Fiji; thence telephone to Harbour Master, Suva.

NOTES AND CHANGES:

8.2.42 Royal Observatory, Hong Kong

(1) Mail Address

Director
Royal Observatory
Hong Kong

(2) Station Designator

OBSERVATORY HONG KONG

Telephone: 677-171

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence satellite teletypewriter to JMA International Telecommunication Center, Tokyo, Japan; thence teletypewriter to Hong Kong Observatory.

First Alternate: Teletypewriter/telephone to FAA IATSC, Honolulu; thence teletypewriter via AFTN to Hong Kong AFTN Center; thence teletypewriter to Hong Kong Observatory.

NOTES AND CHANGES:

8.2.43 Japan Meteorological Agency, Tokyo, Japan

(1) Mail Address

Director-General
Japan Meteorological Agency
Ote-machi, Chiyoda-ku
Tokyo, Japan

Telephone: 211-7953

(2) Station Designator

JMA TOKYO

Commander
20th Weather Squadron (AWC)
APO San Francisco, California 96525

Telephones: 44505 or 44227

ASIAN WEATHER CENTRAL
FUCHU AIR STATION, JAPAN

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence satellite teletypewriter to JMA International Telecommunication Center, Tokyo; thence via courier to JMA Seismic Room.

First Alternate: Teletypewriter via DCS to AFCS Weather Relay and Broadcast Center, Fuchu Air Station, Tokyo; thence teletypewriter to JMA International Telecommunication Center, Tokyo; thence courier to JMA Seismic Room.

NOTES AND CHANGES:

8.2.44 Chief Secretary, Nauru

(1) Mail Address

Chief Secretary
Republic of Nauru
Nauru Island, Central Pacific

(2) Station Designator

NAURU TIDE OBSERVER

(3) Method of Communication

Primary: Telephone/teletypewriter to NavCommSta, Honolulu, Hawaii; thence radio to HMAS "Harmon," Canberra, Australia; thence radio to Sydney, Australia; thence radio to Nauru Radio Station, Nauru; thence telephone to the Administrator, Nauru.

NOTES AND CHANGES:

8.2.45 New Zealand Civil Defence

(1) Mail Address

The Director of Civil Defence
Ministry of Civil Defence
Department of Internal Affairs
Private Bag
Wellington, New Zealand

(2) Station Designator

NEW ZEALAND CIVIL DEFENCE

Telephones:

*70-279
†Maj. Gen. R. B. Dawson, 696-308
†Mr. E. J. Fitzgerald, 675-204
†Mr. P. J. Brooks, UP 89348
†Mr. D. A. Kerr, 893-870

*During normal working hours (Ask for officers in the order listed.)
†After normal working hours

(3) Methods of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via Compac Cable to AeroCommSta, Nandi, Fiji; thence via New Zealand Civil Aviation communication network to Civil Aviation CommCenter, Wellington; thence telephone to Director of Civil Defence.

First Alternate: Teletypewriter via DCS to U.S. Naval CommCenter, Christchurch; thence to New Zealand Civil Aviation CommCenter, Christchurch; thence via Civil Aviation communication network to Civil Aviation CommCenter, Wellington; thence telephone to Director of Civil Defence.

NOTES AND CHANGES:

8.2.46 Papua and New Guinea Civil Defence

(1) Mail Address

Director
Civil Defence and Emergency Services
P.O. Box 391
Port Moresby, Papua

(2) Station Designator

PAPUA/NEW GUINEA
CIVIL DEFENCE

Telephones:
2359 (0745-1600 local time)
*W. J. Johnston, 44441
*F. N. Brewer, 55990
*J. H. Gillman, 55432

*After duty hours

(3) Method of Communication

Primary: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via Compac Cable to AeroCommSta, Nandi, Fiji; thence via landline teletypewriter to Townsville Department of Civil Aviation; thence via radio-teletypewriter to Flight Service Station, Department of Civil Aviation, Port Moresby; thence telephone to Director, Civil Defence.

NOTES AND CHANGES:

8.2.47 Republic of the Philippines Weather Bureau

(1) Mail Address

The Director
Weather Bureau
Quezon City, Republic of the
Philippines

Telephones: 36401, 35949

(2) Station Designator

WEATHER MANILA

(3) Method of Communication

Primary: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via FAA communication network to Philippine CAA CommCenter, Manila; thence via messenger to Weather Bureau Duty Officer.

NOTES AND CHANGES:

8.2.48 Papeete, Tahiti

(1) Mail Address

M. le Directeur du Laboratoire
du Geophysique
B.P. 640, Route de Pamatai
Papeete, Tahiti

(2) Station Designator

CENTEXPACI EM/OPS PAPEETE

(3) Method of Communication

Primary: Telephone/teletypewriter to FAA IATSC, Honolulu, Hawaii; thence via Compac Cable to AeroCommSta, Nandi, Fiji; thence radioteletypewriter to AVIACIV, Papeete, Tahiti; thence teletypewriter to CENTEXPACI, Papeete; thence telephone to Laboratoire du Geophysique.

NOTES AND CHANGES:

8.2.49 Central Weather Bureau, Taiwan

(1) Mail Address

Central Weather Bureau
64, Kung Yuen Road
Taipei, Taiwan 100
Republic of China

Telephone: 22106

(2) Station Designator

TSUNAMI TAIPEI

(3) Method of Communication

Primary: Teletypewriter via DCS to Taiwan Defense Command CommCenter, Taipei; thence telephone to Duty Officer, Central Weather Bureau.

NOTES AND CHANGES:

8.2.50 Territory of New Caledonia

(1) Mail Address

Monsieur le Haute-Commissaire de
la Republic dans le Pacifique
Gouverneur de la Nouvell-Caledonie
Noumea, New Caledonia

(2) Station Designator

METEO NOUMEA

Telephones: Office of the High Commissioner, 28-22 or *2-98; Military Office, 28-24 or *29-86

*After duty hours

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via Compac Cable to AeroCommSta, Nandi, Fiji; thence radioteletypewriter to the fixed aeronautical communication station, Tontouta; thence teletypewriter to Meteo Nationale, Noumea; thence telephone to ORSTOM.

ORSTOM will evaluate watch and warning messages and, in the event of possible danger to the territory and its inhabitants, will notify the civilian authorities charged with warning dissemination.

NOTES AND CHANGES:

8.2.51 Hydrometeorological Observatory, Khabarovsk, U.S.S.R.

(1) Mail Address

Prof. S. L. Soloviev
Sakhalin Complex Scientific Research Institute
Academy of Sciences of the U.S.S.R.
Novoalexandrovsk
Sakhalin, 6 94050, U.S.S.R.

(2) Station Designator

HMS USSR

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence satellite teletypewriter to JMA International Telecommunication Center, Tokyo, Japan; thence teletypewriter via WMO main regional circuit to Tsunami Warning Center at Khabarovsk Hydrometeorological Observatory.

NOTES AND CHANGES:

8.2.52 Geophysical Observatory, Apia, Western Samoa

(1) Mail Address

Observer-In-Charge
Apia Observatory
P.O. Box 52
Apia, Western Samoa

(2) Station Designator

APIA OBSERVATORY

Telephones: Observatory, 220-2 rings; OIC (home or office), 220-3 rings

(3) Method of Communication

Primary: Teletypewriter/telephone to FAA IATSC, Honolulu, Hawaii; thence via Compac Cable to AeroCommSta, Nandi, Fiji; thence radiotelegraph to Apia Radio or CAA Faleolo Airport; thence telephone/radiotelephone to Observer-In-Charge, Apia Observatory.

NOTES AND CHANGES:

REFERENCES

Coast and Geodetic Survey, "Wave Reporting Procedures for Tide Observers in the Tsunami Warning System," Publication 30-3, Environmental Science Services Administration, U. S. Department of Commerce, Rockville, Md., revised June 1970, 45 pp.

Japan Meteorological Agency, "Tsunami Warning Service in Japan," paper presented in Agenda 1 (Summary of the Present System) of the Intergovernmental Oceanographic Commission Working Group on International Aspects of the Tsunami Warning System in the Pacific Meeting at Honolulu, Hawaii, Apr. 27-30, 1965, Tokyo, 1965, pp. 1-21.

Wadati, K., Hirono, T., and Hisamoto, S., "On the Tsunami Warning Service in Japan," International Union of Geodesy and Geophysics Monograph No. 24, Proceedings of the Tsunami Meetings Associated With the Tenth Pacific Science Congress, University of Hawaii, August-September 1961, Imprimé par L'institut Géographique National, Paris, France, July 1963, pp. 138-146.

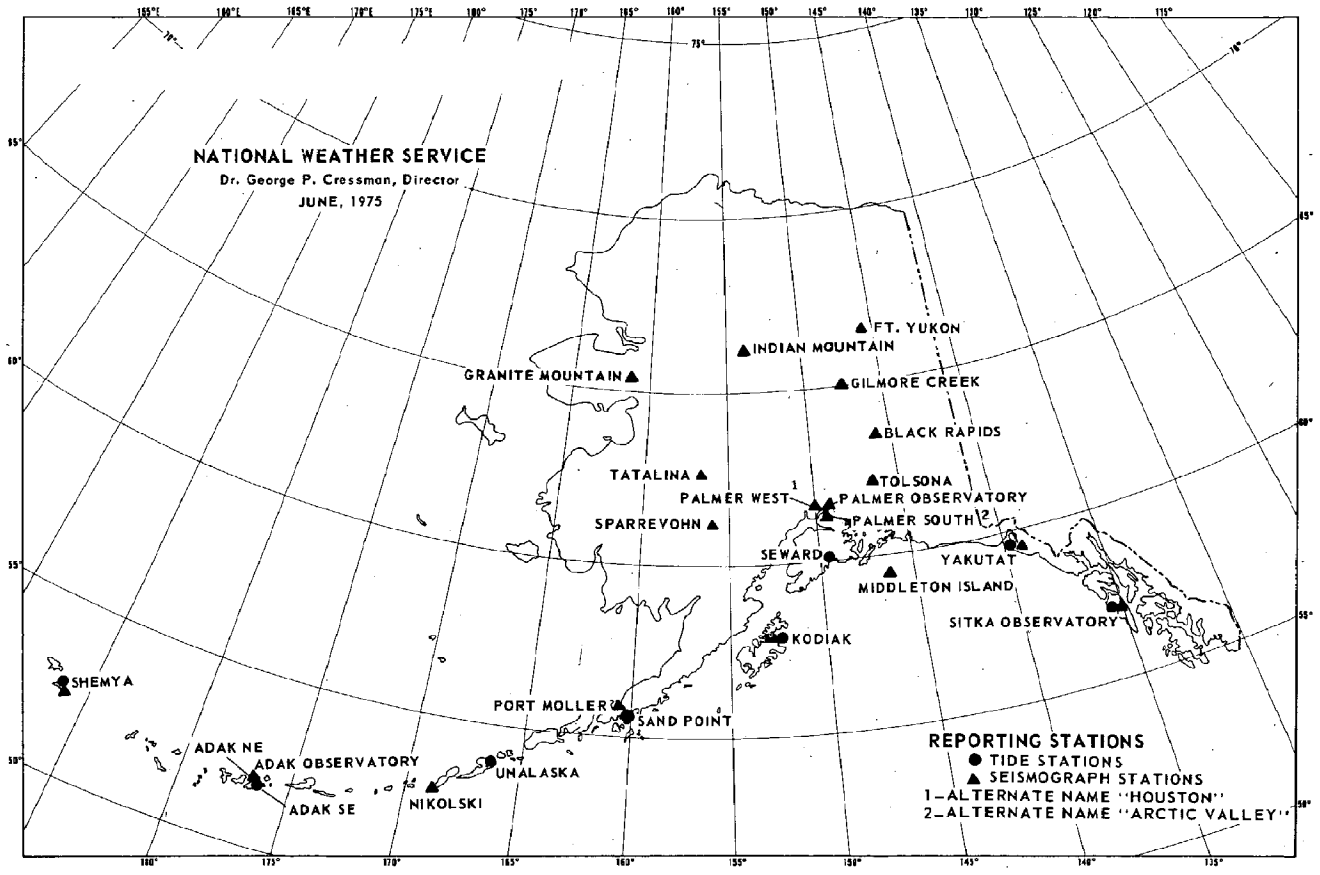

Figure 5.--Alaska Regional Tsunami Warning System

APPENDIX A. ALASKA REGIONAL TSUNAMI WARNING SYSTEM

A1.1 HISTORY

The Alaska Regional Tsunami Warning System (ARTWS) was established as the result of the great earthquake occurring in the Prince William Sound area of Alaska on March 27, 1964 (March 28 GMT). This event alerted State and Federal officials to the need for a facility to provide timely and effective earthquake and tsunami information for Alaska and the northern Pacific.

Funds were provided by Congress in 1965 to construct two new observatories and establish a tsunami warning system in Alaska. The first observatory to be constructed was at the U.S. Naval Station on Adak Island in the Andreanof Islands. This Aleutian Chain island is located 1,200 miles southwest of Anchorage. The city of Palmer in the Matanuska Valley 40 miles north of Anchorage was selected as the site for the primary observatory. Construction of the observatory installations, the task of engineering and assembling the data systems, and the hookup of the extensive telecommunication and data telemetry network was completed in the summer of 1967. With the dedication of the Palmer Observatory as the Alaska Regional Tsunami Warning Center on September 2, 1967, the ARTWS became operational.

A1.2 OBJECTIVES

The primary objective of the Alaska Regional Tsunami Warning System is to detect and locate major earthquakes in the Alaskan region and, in the event that tsunami generation is possible or probable, provide timely and effective tsunami information and warnings to those residents of Alaska and the Aleutian Islands likely to be affected.

A1.3 DESCRIPTION

The Palmer and Adak Observatories under the National Weather Service, Alaska Region, operate the ARTWS. (See figure 5.) Data from the network of seismograph and tide stations that make up the warning system are telemetered continuously to the Warning Center at Palmer. The ARTWS basically consists of the 2 observatories, 17 remote satellite seismic stations, and 8 tide-gage stations.

The system started with six remote seismic stations at Adak, Kodiak, Sitka, Arctic Valley, Houston, and Gilmore Creek and a three-component short-period and a three-component long-period system at Palmer. There were seven tide gages remoted to Palmer from Shemya, Adak, Unalaska, Cold Bay, Kodiak, Seward, and Sitka.

To improve control and increase reliability and accuracy, 12 additional seismic stations at Shemya, Nikolski, Port Moller, Sparrevohn, Tatalina, Indian Mountain, Granite Mountain, Black Rapids, Tolsona, Middleton Island, Fort Yukon, and Yakutat have been added since 1967. The tide station at Cold Bay was relocated to Sand Point, and an eighth tide gage was installed at Yakutat and remoted to Palmer.

A1.4 OPERATIONS

As Warning Center of the ARTWS, Palmer Observatory detects, locates, and computes magnitudes for major earthquakes in the northern Pacific region. Palmer Observatory also determines if the magnitude and location is sufficient to generate a tsunami and issues information or bulletins, as appropriate. The observatory has the responsibility to provide vital tsunami watch and warning information for the coastal population of Alaska and tsunami watch information for the coastal population of Washington, Oregon, California, and Canada. (Note that update or cancellation messages for Washington, Oregon, California, and Canada are issued from Honolulu, Hawaii.) Immediate earthquake information is furnished to the

International Tsunami Information Center in Honolulu; the Japan Meteorological Agency in Tokyo; and the National Earthquake Information Service in Boulder, Colorado. All the communication channels available to the Palmer Observatory are shown in figure 6.

For utilizing the recorded data at Palmer with minimum delay, expedient and precise routine step-by-step formulalike methods have been developed to calculate epicenters and magnitudes. General procedures have been established for each situation and location to provide the urgently needed timely information to the affected or threatened areas.

A1.4.1 Earthquakes in the Alaskan coastal region

The Palmer Observatory will issue a tsunami watch for Alaskan coastal earthquakes of magnitude M_S 6.75 to 7.0 and a tsunami warning for events of greater magnitude. The area of dissemination will be based on the location and magnitude of the earthquake. (See topic A1.4.3.)

After the tsunami watches or warnings are issued, Palmer will monitor the recorded tsunami effects and issue cancellation, all-clear, or extension bulletins as appropriate.

When an earthquake of magnitude M_S 7.0 or greater occurs within 300 kilometers from Adak, Adak Observatory will issue an immediate tsunami warning for the area extending from Amchitka to Seguam Island. Palmer Observatory extends, continues, or cancels tsunami warnings issued by Adak Observatory.

Warnings issued by the Alaska Regional Tsunami Warning System normally will be based on seismic data. Confirmation of the existence of a tsunami will be given as rapidly as possible. If a tsunami exists, Palmer will be able to monitor its progress on the eight widely spaced tide gages at Palmer. If a correction to the ETAs is indicated, it will be nade immediately and disseminated.

All bulletins will be updated at least hourly. If negative or minor unusual tide activity has been noted on the tide stations nearest the earthquake epicenter 30 minutes after the ETAs, the watch or warning status may be cancelled. If a tsunami is generated, dissemination agencies will follow established all-clear procedures of the Tsunami Warning System (i.e., all action agencies shall assume all-clear when free from damaging waves for 2 hours or 2 hours after ETA if no major waves are recorded). Danger to navigation due to rapid current fluctuations in channels and harbors may continue for several hours.

A1.4.2 Earthquakes outside the Alaskan region

If an earthquake with a magnitude of M_S 7.5 or greater occurs in the Komandorski Islands or along the east coast of Kamchatka, Palmer Observatory immediately will issue a watch for the western Aleutian Islands.

If an earthquake of magnitude M_S 7.5 or greater occurs near the west coasts of Canada, Washington, Oregon, or California, the Palmer Observatory will issue an immediate tsunami watch to the appropriate agencies in these areas.

The Honolulu Observatory will be responsible for upgrading, expanding, or canceling any watches issued by the Palmer Observatory for regions outside Alaska. While Palmer Observatory has no responsibility for issuing warnings for tsunamis generated outside Alaskan waters, it will provide technical advice to Alaskan agencies during these occurrences.

A1.4.3 Watch and warning procedures for large Alaskan quakes

M_S Magnitude		
6.75-7.0	Coastal quakes	Locate, size, and issue an immediate TSUNAMI WATCH (for an area within at least a 200-mile radius of the epicenter) to ADO; AP Bureau-Seattle; ALCOM; Adak Observatory; FAA-Anchorage;

M_S Magnitude		
		DCPA Regions 7 and 8; RCMP-Victoria; 17th Coast Guard-Juneau; HO; JMA; Washington; Oregon; California; and NWS-Anchorage. Also give to UPI-Seattle; FDAA Regions 9 and 10; NWS-W161; and NEIS. Inspect marigrams and take appropriate action.
	All others	Locate, size and issue an immediate release to ADO; AP Bureau; UPI; FAA-Anchorage; ALCOM; DCPA Regions 7 and 8; FDAA Regions 9 and 10; RCMP-Victoria; 17th Coast Guard; HO; Washington; Oregon; California; NEIS; JMA; NWS-Anchorage; NWS-W161; and Adak Observatories.
7.0-7.75	Coastal quakes	Locate, size, and issue an immediate TSUNAMI WARNING (for an area within ac least a 200-mile radius of the epicenter and a WATCH for the remainder of the Alaskan coastline) to all agencies as in "Coastal quakes."
	All others	Same procedure as for "All others"
7.75	Coastal quakes	Locate, size, and issue an immediate TSUNAMI WARNING (for an area within at least a 500-mile radius of the epicenter) and issue an immediate WATCH (for the remainder of the Alaskan coastline) tó all agencies as in "Coastal quakes."
	All others	Same procedure as for "All others"

A1.4.4 Watch and warning procedures for large non-Alaskan quakes

M_S Magnitude		
6.5-7.0	Quakes	Locate, size, and report to NEIS and HO via SS priority. Give information to Adak Observatory.
7.0	Outside Pacific	Locate, size, and report immediately to NEIS HO, and JMA. Give information to Adak Observatory.
	Pacific quakes	Locate, size, and report immediately to HO, NEIS, and JMA via SS priority. Release message to Pacific Coast States; 17th Coast Guard; DCPA Regions 7 and 8; FDAA Regions 9 and 10; RCMP-Victoria; Adak Observatory; NWS-W161; and NWS-Anchorage. Stand by for NTWC action.
	Honolulu watch or warning	If HO is issuing a WATCH or WARNING Bulletin, inform ADO; ALCOM; FAA-Anchorage; 17th Coast Guard; NWS-Anchorage; and Adak Observatory. Keep them advised.
	Canada and Pacific States coastal quakes	If magnitude is 7.5 or greater, locate, size, and issue an immediate TSUNAMI WATCH to Washington; Oregon; California; ADO; RCMP-Victoria; DCPA Regions 7 and 8; FDAA Regions 9 and 10; 17th Coast Guard; NEIS; JMA; HO; ALCOM; UPI-Seattle;

	AP-Seattle; NWS-W161; NWS-Anchorage; and Adak Observatory. Stand by for NTWC action.
Komandorsky or off-coast-of-Kamchatka quakes	If magnitude is 7.5 or greater, locate, size, and issue an immediate TSUNAMI WATCH (for the western Aleutian Islands) to ADO; ALCOM; AP-Seattle; Adak Observatory; FAA-Anchorage; DCPA Regions 7 and 8; FDAA Regions 9 and 10; 17th Coast Guard; UPI-Seattle; RCMP-Victoria; HO; NEIS; JMA; NWS-W161; NWS-Anchorage; Washington; Oregon; and California. Stand by for NTWC action.

A1.4.5 Sample ARTWS watch/warning message format

WATCH-WARNING MESSAGE FORMAT

THIS IS PALMER BULLETIN NUMBER _____. THIS IS A TSUNAMI _____ (watch/warning) FROM THE NATIONAL WEATHER SERVICE PALMER OBSERVATORY.

A ___* EARTHQUAKE (PRELIMINARY MAGNITUDE ____) HAS OCCURRED _____ (distance) MILES _____ (direction) OF _____ (location).
(LAT _____N LONG _____) AT _____ (time) ZULU, _____ (ZULU date).

(Choose either 1 or 2 as appropriate:)

1. TSUNAMI NOT KNOWN

   IT IS NOT KNOWN, REPEAT NOT KNOWN, IF A TSUNAMI HAS BEEN GENERATED.

   (A) THE ALASKAN COASTAL AREA FROM _____ TO _____ SHOULD BE EVACUATED AT ONCE.

   (B) A TSUNAMI WATCH SHOULD BE ISSUED (FROM _____ TO _____) (TO THE REMAINDER OF THE ALASKAN COASTLINE).

2. TSUNAMI KNOWN

   A TSUNAMI HAS BEEN GENERATED THAT HAS BEEN OBSERVED AT _____ (places and heights).

   (A) THE ALASKAN COASTAL AREA FROM _____ TO _____ SHOULD BE EVACUATED AT ONCE. A TSUNAMI WATCH SHOULD BE ISSUED TO THE REMAINDER OF THE ALASKAN COASTLINE.

   (B) THE ENTIRE ALASKAN COASTLINE FROM ATTU TO KETCHIKAN SHOULD BE EVACUATED AT ONCE.

ETA INFORMATION (when available) IS AS FOLLOWS.

SHEMYA	_____ Z	KODIAK	_____ Z	CORDOVA	_____ Z
ADAK	_____ Z	HOMER	_____ Z	YAKUTAT	_____ Z
UNALASKA	_____ Z	SEWARD	_____ Z	SITKA	_____ Z
SAND POINT	_____ Z	VALDEZ	_____ Z	KETCHIKAN	_____ Z

FURTHER INFORMATION WILL FOLLOW WHEN AVAILABLE.

*LARGE, M_s of 6.5-6.9 MAJOR, M_s of 7.0-7.7 SEVERE, M_s of 7.8 or above

A1.4.6 Sample ARTWS cancellation and all-clear message format

TSUNAMI WATCH OR WARNING CANCELLATION MESSAGE

THIS IS PALMER BULLETIN NUMBER _____. THIS IS A TSUNAMI _____ (watch/warning) CANCELLATION FOR ALASKA FROM THE NATIONAL WEATHER SERVICE PALMER OBSERVATORY.

A _____* EARTHQUAKE OCCURRED _____ (distance) MILES _____ (direction) OF _____ (location), ALASKA, AT _____ (time) ZULU, _____ (ZULU date). _____ (Negative/minor) TSUNAMI TIDE ACTIVITY HAS BEEN NOTED ON OUR TIDE GAGES AT _____.

TSUNAMI _____ (watch/warning) STATUS IS CANCELLED FOR ALASKA. ALL AGENCIES ASSUME ALL CLEAR UPON RECEIPT OF THIS MESSAGE.

TSUNAMI WARNING ALL CLEAR MESSAGE

THIS IS PALMER BULLETIN NUMBER _____. THIS IS A TSUNAMI WARNING SUPPLEMENT FOR ALASKA FROM THE NATIONAL WEATHER SERVICE PALMER OBSERVATORY. REFERENCE PALMER BULLETIN NUMBER _____. THE ALASKAN COASTAL AREA FROM _____ TO _____ SHOULD ASSUME ALL CLEAR WHEN FREE FROM DAMAGING WAVES FOR TWO HOURS OR TWO HOURS AFTER ETA IF NO MAJOR WAVES ARE RECORDED. DANGER TO NAVIGATION DUE TO RAPID CURRENT FLUCTUATIONS IN CHANNELS AND HARBORS MAY CONTINUE FOR SEVERAL ADDITIONAL HOURS.

*LARGE, M_S of 6.5-6.9 MAJOR, M_S of 7.0-7.7 SEVERE, M_S of 7.8 and above

A1.4.7 Sample ARTWS west coast of U.S. and Canada watch bulletin

WEST COAST TSUNAMI WATCH BULLETIN

FOR COASTAL EVENTS GREATER THAN 7.5

THIS IS PALMER BULLETIN NUMBER _____. THIS IS A TSUNAMI WATCH FROM THE NATIONAL WEATHER SERVICE'S PALMER OBSERVATORY. A SEVERE EARTHQUAKE, PRELIMINARY MAGNITUDE _____, HAS OCCURRED _____ (location - near or off coast) AT _____ (time) ZULU, _____ (ZULU date).

IT IS NOT KNOWN, REPEAT NOT KNOWN, IF A TSUNAMI HAS BEEN GENERATED. FURTHER INFORMATION WILL FOLLOW FROM THE NATIONAL TSUNAMI WARNING CENTER IN HONOLULU.

A1.5 COMMUNICATION METHODS FOR SEISMOLOGICAL STATIONS WITH PALMER OBSERVATORY

A1.5.1 Palmer Seismological Observatory (ARTWS Control Center)

(1) Mail Address

Palmer Seismological Observatory
Alaska Tsunami Warning System
NOAA, National Weather Service
P.O. Box Y
Palmer, Alaska 99645

(2) Station Designator

PALMER OBSERVATORY

Telephones: 907-745-4212, 745-3175, or AUTOVON 836-1212

(3) Methods of Communication

Primary: Communication with Palmer Observatory from its 18 Alaskan remote seismometer locations is by direct full-period telemetry link. Of these locations, 16 are not manned. They are the following.

Shemya	Granite Mountain	Tatalina	Houston
Nikolski	Indian Mountain	Sparrevohn	Arctic Valley
Port Moller	Fort Yukon	Black Rapids	Middelton Island
Kodiak	Gilmore Creek	Tolsona	Yakutat

Topics A1.5.2 and A1.5.3 list the two manned locations at Adak and Sitka.

A1.5.2 Adak Seismological Observatory

(1) Mail Address

Chief
Adak Observatory
NOAA, National Weather Service
P.O. Box 51, U.S. Naval Station
FPO Seattle, Washington 98791

(2) Station Designator

ADAK OBSERVATORY AK

Telephones: Commercial or AUTOVON (Commercial 907-579-3250, 579-2216, *579-3252, *579-3254, *579-3253

*Call in the order listed after normal working hours (0730-1600 local time Monday through Friday)

(3) Methods of Communication

Primary: Teleneter to Palmer Observatory.

First Alternate: Teletypewriter via ARTWS Net order wire to Palmer Observatory.

Second Alternate: Telephone via AUTOVON/commercial to Palmer Observatory.

NOTES AND CHANGES:

A1.5.3 Sitka Observatory

(1) Mail Address

Chief, Sitka Observatory
U.S. Geological Survey
P.O. Box 158
Sitka, Alaska 99835

Telephones: 907-747-3332 or 747-3922

(2) Station Designator

SITKA OBSERVATORY

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone via commercial to Palmer Observatory.

NOTES AND CHANGES:

A1.6 COMMUNICATION METHODS FOR TIDE STATIONS WITH PALMER OBSERVATORY

A1.6.1 Adak (Sweeper Cove), Alaska

(1) Mail Address

Chief, Adak Observatory
NOAA, National Weather Service
P.O. Box 51, U.S. Naval Station
FPO Seattle, Washington 98791

(2) Station Designator

ADAK OBSERVATORY AK

Telephones: Commercial or AUTOVON (Commercial 907-579-3250, 579-2216, *579-3252, *579-3254, *579-3253)

*Call in the order listed after normal working hours (0730-1600 local time Monday through Friday).

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Teletypewriter via ARTWS Net order wire to Palmer Observatory.

Second Alternate: Telephone via AUTOVON/commercial to Palmer Observatory.

NOTES AND CHANGES:

A1.6.2 Kodiak, Alaska

(1) Mail Address

Tide Observer
NOAA, National Weather Service
Box 36, U.S. Coast Guard Base
Kodiak, Alaska 99615

(2) Station Designator

KODIAK TIDE OBSERVER

Telephone: Commercial or AUTOVON (Commercial 907-487-3313)

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone via AUTOVON/commercial to Palmer Observatory.

Second Alternate: Teletypewriter via FAA Service B system to FAA IFSS, Anchorage; thence via FAA Service B to Palmer Observatory.

NOTES AND CHANGES:

A1.6.3 Sand Point, Alaska

(1) Mail Address

Charles H. B. Maloney
Sand Point Tide Observer
c/o Wakefield Cannery
Wakefield Seafoods, Inc.
Sand Point, Alaska 99661

Telephone: 907-283-2311

(2) Station Designator

PALMER OBSERVATORY

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone to Palmer Observatory.

NOTES AND CHANGES:

A1.6.4 Seward, Alaska

(1) Mail Address

Mr. James Shingleton
P.O. Box 1023
Seward, Alaska 99664

Telephones: Dock, 907-224-5477; home, 907-224-5580

(2) Station Designator

PALMER OBSERVATORY

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone to Palmer Observatory.

NOTES AND CHANGES:

A1.6.5 Shemya, Alaska

(1) Mail Address

Tide Observer
Air Weather Facility
Shemya Air Force Base
APO Seattle, Washington 98736

(2) Station Designator

PALMER OBSERVATORY

Telephones: AUTOVON or commercial 907-572-3555 or 572-3577

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone to Palmer Observatory.

NOTES AND CHANGES:

A1.6.6 Sitka, Alaska

(1) Mail Address

Chief
Sitka Observatory
U.S. Geological Survey
P.O. Box 158
Sitka, Alaska 99835

Telephones: 907-747-3332; if no answer, try 747-3922

(2). Station Designator

SITKA OBSERVATORY

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone to Palmer Observatory.

NOTES AND CHANGES:

A1.6.7 Unalaska, Alaska

(1) Mail Address

Mr. Jonathan Knapp
Unalaska, Alaska 99685

Telephone: 907-581-1211

(2) Station Designator

PALMER OBSERVATORY

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone to Palmer Observatory.

NOTES AND CHANGES:

A1.6.8 Yakutat, Alaska

(1) Mail Address

Mr. Bill Bailey
Box 365
Yakutat, Alaska 99689

Telephone: 907-784-3377

(2) Station Designator

PALMER OBSERVATORY

(3) Methods of Communication

Primary: Telemeter to Palmer Observatory.

First Alternate: Telephone to Palmer Observatory.

Second Alternate: Telephone/courier to FAA FSS, Yakutat; thence teletypewriter via FAA Service B system to FAA IFSS, Anchorage; thence via FAA Service B to Palmer Observatory.

NOTES AND CHANGES:

A1.7 DISSEMINATION FROM PALMER OBSERVATORY

Agencies receiving WATCH and WARNING information from Palmer Observatory are:

1. Adak Observatory--by teletypewriter.
2. Alaska Command, Elmendorf AFB--by telephone.
3. Defense Civil Preparedness Agency, Region 7--by NAWAS.
4. Defense Civil Preparedness Agency, Region 8--by NAWAS.
5. Federal Aviation Administration, IFSS, Anchorage--by teletypewriter.
6. Federal Aviation Administration, RCCC, Anchorage--by teletypewriter.
7. Federal Disaster Assistance Administration, Operations Center--by teletypewriter.
8. Federal Disaster Assistance Administration, Region 9--by teletypewriter.
9. Federal Disaster Assistance Administration, Region 10--by NAWAS.
10. Honolulu Observatory, Ewa Beach--by telephone.
11. National Earthquake Information Service, Golden--by telephone.
12. National Warning Center, NORAD, Colorado--by NAWAS.
13. National Weather Service, Anchorage--by teletypewriter.
14. National Weather Service, Silver Spring, Maryland--by teletypewriter.
15. U.S. Coast Guard, 17th District, Juneau--by NAWAS.
16. Alaska Disaster Office, Anchorage--by NAWAS.
17. Alaska State Troopers, Anchorage--by NAWAS.
18. California Office of Emergency Services, Sacramento--by NAWAS.
19. Oregon Department of Emergency Services, Salem--by NAWAS.
20. Washington Department of Emergency Services, Olympia--by NAWAS.
21. Associated Press Bureau, Seattle, Washington--by telephone.
22. United Press International, Seattle--by telephone.
23. Emergency Programme Coordinator, Province of British Columbia, Canada--by NAWAS.
24. Japan Meteorological Agency, Tokyo--by teletypewriter.
25. Royal Canadian Mounted Police, Victoria, British Columbia--by NAWAS.

A1.7.1 Adak Observatory

(1) Mail Address

Chief, Adak Observatory
NOAA, National Weather Service
P.O. Box 51, U.S. Naval Station
FPO Seattle, Washington 98791

(2) Station Designator

ADAK OBSERVATORY AK

Telephones: AUTOVON or commercial 907-579-3250, 579-2216, *579-3252, *579-3254, *579-3253

*Call in the order listed after working hours (0730-1600 local time, Monday through Friday)

(3) Methods of Communication

Primary: Teletypewriter via ARTWS net order wire to Adak Observatory.

First Alternate: Telephone via AUTOVON/commercial to Adak Observatory.

Second Alternate: Teletypewriter via FAA Service B to FAA RCCC, Anchorage; thence via DCS to CommCenter, NavSta, Adak; thence telephone/courier to Adak Observatory.

NOTES AND CHANGES:

DCS routing indicator for Adak CommCenter is RUWMDMA.

A1.7.2 Alaska Command

(1) Mail Address

Headquarters, Alaska Command
Attention: J 3/5 ALMCC
Elmendorf AFB
APO Seattle, Washington 98742

(2) Station Designator

ALCOM ELMENDORF AFB AK

Telephones: AUTOVON or commercial 907-753-2226, 753-2228, 753-8118; commercial only, 907-277-4214

(3) Method of Communication

Primary: Telephone via AUTOVON/commercial to headquarters, Alaska Command, Elmendorf AFB.

First Alternate: Teletypewriter to FAA Message Center, Anchorage, via FAA Service B; thence teletypewriter via DCS to ALCOM CommCenter, thence via messenger to ALMCC.

NOTES AND CHANGES:

DCS routing indicator for ALCOM is RUWMBKA.

A1.7.3 Defense Civil Preparedness Agency, Region 7

(1) Mail Address

Department of Defense
Defense Civil Preparedness Agency, Region 7
P.O. Box 7287
Santa Rosa, California 95401

(2) Station Designator

DCPA REGION 7
SANTA ROSA CA

Telephones: *707-544-1330, ext. 211, AUTOVON 831-1570 or 831-1920

*During normal working hours. After hours, call California Office of Emergency Services, Sacramento. (See topic A1.5.18.)

(3) Methods of Communication

Primary: Call via NAWAS to DCPA Region 7, Santa Rosa.

First Alternate: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to DCPA Region 7, Santa Rosa.

NOTES AND CHANGES:

After normal working hours, the California Office of Emergency Services protects the NAWAS phone for DCPA Region 7. After normal working hours, the 6th Army CommCenter, San Francisco, California, protects the DCS teletypewriter for DCPA Region 7. The DCS teletypewriter routing indicator for Region 7 is RUWJRTA.

A1.7.4 Defense Civil Preparedness Agency, Region 8

(1) Mail Address

Regional Director, Region 8
Defense Civil Preparedness Agency
Department of Defense
Bothell, Washington 98011

(2) Station Designator

DCPA REGION 8
BOTHELL WA

Telephones: 206-486-0721 or 486-0729, AUTOVON 554-1179 or 554-1970

(3) Methods of Communication

Primary: Call via NAWAS TO DCPA Region 8, Bothell, Washington.

First Alternate: Teletypewriter to FAA RCCC, Anchorage, Alaska; thence via DCS to ACOMM Region 8, Bothell; thence via messenger/telephone to DCPA Regional Director.

NOTES AND CHANGES:

DCS routing indicator for ACOMM Bothell is RUWMRIA.

A1.7.5 Federal Aviation Administration, IFSS

(1) Mail Address

Federal Aviation Administration
International Flight Service Station
Merrill Field
Anchorage, Alaska 99501

(2) Station Designator

FAA IFSS ANCHORAGE

Telephones: 907-272-6823 or AUTOVON 255-6781

(3) Methods of Communication

Primary: Teletypewriter via FAA Service B to FAA IFSS, Anchorage.

First Alternate: Telephone via AUTOVON/commercial to FAA IFSS, Anchorage.

NOTES AND CHANGES:

FAA Service B routing indicator is PANCYF.

A1.7.6 Federal Aviation Administration, RCC

(1) Mail Address

Federal Aviation Administration
Attention: AAL-6
632 6th Avenue
Anchorage, Alaska 99501

(2) Station Designator

FAA RCCC ANCHORAGE

Telephones: 907-265-4391 or 272-8812 or AUTOVON 255-3911 or 434-1212

(3) Methods of Communication

Primary: Teletypewriter via FAA Service B to FAA RCCC, Anchorage.

First Alternate: Telephone via AUTOVON/commercial to FAA RCCC, Anchorage.

NOTES AND CHANGES:

FAA Service B routing indicator is PANCYA. DCS routing indicator is RUWMNAA.

A1.7.7 Federal Disaster Assistance Administration Operations Center

(1) Mail Address

Chief, Operations Center
FDAA, Department of HUD
Mail Room B-133
451 Seventh Street, S.W.
Washington, D.C. 20410

(2) Station Designator

FDAA SFD WASH DC

(3) Method of Communication

Primary: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to the Special Facilities Division, Washington, D.C.; thence telephone to the Chief, Operations Center.

NOTES AND CHANGES:

DCS routing indicator for FDAA SFD is RUCFAAA.

A1.7.8 Federal Disaster Assistance Administration Region 9

(1) Mail Address

Regional Director, Region 9
Federal Disaster Assistance Administration
120 Montgomery Street
San Francisco, California 94104

Telephone: *415-556-8794

*Office open only during normal working hours

(2) Station Designator

FDAA REGION 9
SAN FRANCISCO CA

(3) Method of Communication

Primary: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to DCPA Region 7; thence telephone to FDAA Region 9.

NOTES AND CHANGES:

DCS routing indicator for DCPA Region 7 is RUWJRTA.

A1.7.9 Federal Disaster Assistance Administration Region 10

(1) Mail Address

Regional Director, Region 10
Federal Disaster Assistance Administration
Room M-16, Arcade Building
1319 2d Avenue
Seattle, Washington 98101

Telephone: 206-442-1310

(2) Station Designator

FDAA REGION 10
SEATTLE WA

(3) Methods of Communication

Primary: Call via NAWAS to ACOMM Region 8, Bothell, Washington; thence telephone to FDAA Region 10, Seattle.

First Alternate: Teletypewriter to FAA RCCC, Anchorage via FAA Service B; thence via DCS to ACOMM Region 8, Bothell; thence telephone to FDAA Region 10, Seattle.

NOTES AND CHANGES:

DCS routing indicator for ACOMM Region 8 is RUWMRIA.

A1.7.10 Honolulu Observatory

(1) Mail Address

Chief, Honolulu Observatory
NOAA, National Weather Service
91-270 Fort Weaver Road
Ewa Beach, Oahu, Hawaii 96706

(2) Station Designator

HONOLULU OBSERVATORY
EWA BEACH, HAWAII

Telephones: 808-689-8207 or 689-8622, AUTOVON-Honolulu Switch, 474-9191

(3) Methods of Communication

Primary: Telephone via AUTOVON/commercial phone to Honolulu Observatory.

First Alternate: Teletypewriter via FAA Service B to Honolulu Observatory.

NOTES AND CHANGES:

FAA Service B routing indicator is PHNLYY.

A1.7.11 National Earthquake Information Service

(1) Mail Address

U.S. Geological Survey
National Earthquake Information Service, D2
Denver Federal Center, Building 25
Denver, Colorado 80225

(2) Station Designator

USGS/NEIS BOULDER COLO

Telephones: 303-234-3994 during normal working hours. After hours, call duty officer per schedule furnished to Palmer Observatory.

(3) Methods of Communication

Primary: Telephone via AUTOVON/commercial to NEIS during normal working hours or to scheduled duty geophysicist after hours.

First Alternate: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to Space Environment CommCenter, Boulder, Colorado; thence telephone to NEIS duty geophysicist.

Second Alternate: Teletypewriter via FAA Service B to FAA IFSS, Anchorage; thence via FAA communication network to FAA IATSC, San Francisco, California; thence telephone to NEIS.

NOTES AND CHANGES:

DCS routing indicator for Space Environment CommCenter is RTUTGPA. The telephone numbers of the IATSC, San Francisco, are FTS 415-692-2594 and Commercial 415-877-3413. (Ask for supervisor.)

A1.7.12 National Warning Center, NORAD

(1) Mail Address

National 1 Warning Center
Headquarters NORAD
NCOC Box 7
Ent Air Force Base, Colorado 80912

Telephones: 303-635-4486, AUTOVON 834-3945

(2) Station Designator

NATIONAL 1 WARNING CENTER
ENT AFB CO

(3) Methods of Communication

Primary: Call via NAWAS to National 1 Warning Center.

First Alternate: Telephone via AUTOVON/commercial to National 1 Warning Center.

NOTES AND CHANGES:

A1.7.13 National Weather Service, Anchorage

(1) Mail Address

Meteorologist in Charge
NOAA, National Weather Service
Forecast Office
632 6th Avenue
Anchorage, Alaska 99501

(2) Station Designator

NWS ANCHORAGE

Telephones: 907-265-4707 or AUTOVON 255-7071 or 753-9116

(3) Methods of Communication

Primary: Call via NAWAS to Duty Forecaster, NWS, Anchorage.

First Alternate: Teletypewriter via FAA Service B to Forecast Center, NWS, Anchorage.

Second Alternate: Telephone via AUTOVON/commercial to Duty Forecaster, NWS, Anchorage.

NOTES AND CHANGES:

FAA Service B routing indicator is PANCYM.

A1.7.14 Director, National Weather Service

(1) Mail Address

Associate Director, Meteorology
and Oceanography
National Weather Service
National Oceanic and Atmospheric
Administration
Silver Spring, Maryland 20910

(2) Station Designator

NWS W161 SUITLAND MD

Telephones:
*301-427-7278
+Mark G. Spaeth, 774-4692
+Bertrand J. Thompson, 464-0917
+Richard H. Allbritton, 890-6398

*During normal working hours (0800-1630 local time Monday through Friday)
+After normal working hours. Call in order listed.

(3) Methods of Communication

Primary: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to National Weather Service, Suitland, Maryland; thence telephone to NWS, Silver Spring, and teletypewriter confirmation copy via RAWARC circuit 23420.

First Alternate: Telephone via AUTOVON/commercial to Office of Meteorology and Oceanography, W161, National Weather Service, Silver Spring, or listed staff member.

NOTES AND CHANGES:

DCS routing indicator for National Weather Service, Suitland, is RUEOLMA.

A1.7.15 U.S. Coast Guard, 17th District

(1) Mail Address

Commander
17th Coast Guard District
OSR
P.O. Box 3-5000
Juneau, Alaska 99800

(2) Station Designator

USCG COMSEVENTEEN
JUNEAU AK

Telephones: 907-586-2680, AUTOVON 388-7340

(3) Methods of Communication

Primary: Call via NAWAS to USCG Juneau.

First Alternate: Teletypewriter via FAA Service B to FAA RCCC, Anchorage; thence via DCS teletypewriter to Office of Search and Rescue, USCG COMSEVENTEEN, Juneau.

Second Alternate: Telephone via AUTOVON/commercial to Office of Search and Rescue, USCG, COMSEVENTEEN, Juneau.

NOTES AND CHANGES:

DCS routing indicator for COMSEVENTEEN USCG is RUWMDMA.

A1.7.16 Alaska Disaster Office

(1) Mail Address

Director
Alaska Disaster Office
State of Alaska
1306 East 4th Avenue
Anchorage, Alaska 99501

(2) Station Designator

ALASKA DISASTER OFFICE

Telephones: 907-272-0594 or AUTOVON 753-0221 during office hours, 0800-1630 local time except weekends and holidays. At other times, call Alaska State Troopers, 907-272-1561 or 272-1522.

(3) Methods of Communication

Primary: Call via NAWAS to Director, Alaska Disaster Office, during office hours. After office hours, call Alaska State Troopers, Anchorage. (See topic A1.5.17.)

First Alternate: Telephone to the Director, Alaska Disaster Office. After office hours, call Alaska State Troopers, Anchorage. (See topic A1.5.17.)

Second Alternate: Teletypewriter to FAA Message Center, Anchorage, via FAA Service B; thence telephone to Director or Duty Officer, Alaska Disaster Office, Anchorage.

NOTES AND CHANGES:

Palmer Observatory is furnished a list of Alaska Disaster Office Duty Officers and phone numbers weekly. After normal office hours, the Alaska State Troopers, Anchorage, are responsible for contacting the ADO duty officer and performing ADO emergency functions until the duty officer takes over.

A1.7.17 Alaska State Troopers

(1) Mail Address

Director
Alaska State Troopers
6188 Annex
Anchorage, Alaska 99502

Telephones: 907-272-1561 or 272-1552

(2) Station Designator

STATE TROOPERS

(3) Methods of Communication

Primary: Call via NAWAS to Alaska State Troopers after office hours (0800-1600 local time Monday through Friday). During office hours, call via telephone.

First Alternate: Call via State of Alaska VHF radio to Alaska State Troopers, Anchorage.

NOTES AND CHANGES:

After normal office hours, the Alaska State Troopers, Anchorage, are responsible for performing emergency functions of the Alaska Disaster Office until they can contact the ADO duty officer to take over. (See topic A1.5.16.)

A1.7.18 California Office of Emergency Services

(1) Mail Address

Director
California Office of Emergency Services
P.O. Box 9577
Sacramento, California 95823

(2) Station Designator

CALIFORNIA CIVIL DEFENSE

Telephones: 916-421-4990 or 445-6231

(3) Methods of Communication

Primary: Call via NAWAS to California Office of Emergency Services, Sacramento.

First Alternate: Telephone to California Office of Emergency Services, Sacramento.

NOTES AND CHANGES:

If the California Office of Emergency Services cannot be reached, the following is the alternate.

California Highway Patrol
Communications Center
Sacramento, California 95818

Telephones: 916-451-4960 or 445-2211

A1.7.19 Oregon Department of Emergency Services

(1) Mail Address

Administrator
Emergency Services Division
Oregon State Executive Department
Room 8, State Capitol Building
Salem, Oregon 97310

Telephone: 503-378-4124

Oregon State Police Patrol Station
State Street and Airport Road
Salem, Oregon 97310

Telephone: 503-378-3071

(2) Station Designator

OREGON DEPARTMENT OF
EMERGENCY SERVICES

(3) Methods of Communication

Primary: Call via NAWAS to Department of Emergency Services, Salem, during normal working hours and the Oregon State Police, Salem, after normal working hours.

First Alternate: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to DCPA Region 8, Bothell, Washington; thence via NAWAS, teletypewriter, or telephone to Oregon State Police, Salem; thence telephone to Department of Emergency Services Duty Officer.

NOTES AND CHANGES:

DCPA Region 8, Bothell DCS routing indicator is RUWMRIA.

A1.7.20 Washington Department of Emergency Services

(1) Mail Address

State of Washington
Department of Emergency Services
4220 Martin Way
Olympia, Washington 98504

Telephone: 206-753-5255

Washington State Patrol
Division of Communications
General Administration Building
Olympia, Washington 98504

Telephone: 206-753-4000

(2) Station Designator

WASHINGTON DEPARTMENT OF
EMERGENCY SERVICES

(3) Methods of Communication

Primary: Call via NAWAS to Washington Civil Defense during normal working hours. After working hours, call via NAWAS to Washington State Patrol, Olympia; thence telephone to Duty Officer Civil Defense.

First Alternate: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to DCPA Region 8, Bothell; thence via NAWAS, telephone, or teletypewriter to Washington State Patrol, Olympia; thence telephone to Washington Civil Defense.

NOTES AND CHANGES:

DCPA Region 8, Bothell DCS routing indicator is RUWMRIA.

A1.7.21 Associated Press Bureau, Seattle

(1) Mail Address

Chief of Bureau
Associated Press
Seattle Times Building
Fairview and John Street
Seattle, Washington 98101

Telephone: 206-682-1812

(2) Station Designator

AP SEATTLE

(3) Methods of Communication

Primary: Telephone or AUTOVON/commercial to AP Bureau, Seattle.

NOTES AND CHANGES:

A1.7.22 United Press International Bureau, Seattle

(1) Mail Address

Seattle Bureau
United Press International
Post-Intelligencer Building
Seattle, Washington 98111

(2) Station Designator

UPI SEATTLE BUREAU

Telephones: *206-622-2505, +415-626-6300

*Call the Seattle Office anytime except 11:30 p.m. Saturday through 7:00 a.m. Sunday, local Seattle time. +Call the San Francisco Office between 11:30 p.m. Saturday through 7:00 a.m. Sunday, local Seattle time.

(3) Method of Communication

Primary: Telephone via AUTOVON/commercial to UPI Seattle Bureau or its alternate Bureau in San Francisco, California.

NOTES AND CHANGES:

A1.7.23 Emergency Programme Coordinator, Province of British Columbia

(1) Mail Address

Coordinator, Provincial Emergency Programme
Parliament Buildings
Victoria, British Columbia V8V 1X4
Canada

Telephones: 604-387-6610, 387-3545

(2) Station Designator

EMERGENCY PROGRAMME COORDINATOR
VICTORIA BC

(3) Methods of Communication

Primary: Call via NAWAS to DCPA Region 8, Bothell, Washington; thence telephone collect to Royal Canadian Mounted Police, Victoria; thence telephone to Provincial Emergency Programme Coordinator.

First Alternate: Teletypewriter to FAA RCCC, Anchorage, Alaska; thence via DCS to DCPA Region 8, Bothell; thence teletypewriter to 740 Com Sqd, Nanaimo, British Columbia; thence telephone/teletypewriter to Provincial Emergency Programme Coordinator and the Royal Canadian Mounted Police, Victoria.

NOTES AND CHANGES:

DCS routing indicator for DCPA Region 8 is RUWMRIA.

A1.7.24. Japan Meteorological Agency

(1) Mail Address

Director-General
Japan Meteorological Agency
Ote-machi, Chiyoda-ku
Tokyo, Japan

Telephones: 03-211-7953 or 03-211-7952

(2) Station Designator

JMA TOKYO

(3) Methods of Communication

Primary: Teletypewriter via FAA Service B to JMA International Telecommunication Center, Tokyo; thence via courier to JMA Seismic Room.

First Alternate: Teletypewriter via FAA Service B to FAA RCCC, Anchorage, Alaska; thence via DCS to AFCS Weather Relay and Broadcast Center, Fuchu Air Station, Japan; thence teletypewriter to JMA International Telecommunication Center, Tokyo; thence courier to JMA Seismic Room.

NOTES AND CHANGES:

FAA Service B routing indicator for JMA is RJTDYM. DCS routing indicator for Fuchu is RUMMOPA.

A1.7.25 Royal Canadian Mounted Police, Victoria

(1) Mail Address

E-Division Headquarters
Royal Canadian Mounted Police
Victoria, British Columbia
Canada

Telephones: 604-388-3371 or 388-3662

(2) Station Designator

RCMP VICTORIA BC

(3) Methods of Communication

Primary: Call via NAWAS to DCPA Region 8, Bothell, Washington; thence telephone collect to Royal Canadian Mounted Police, Victoria.

First Alternate: Teletypewriter to FAA RCCC, Anchorage; thence via DCS to DCPA Region 8, Bothell; thence teletypewriter to 740 Com Sqd, Nanaimo, British Columbia; thence telephone/teletypewriter to Royal Canadian Mounted Police, Victoria.

NOTES AND CHANGES:

DCS routing indicator for DCPA Region 8 is RUWMRIA.

A1.8 DISSEMINATION FROM ADAK OBSERVATORY

Agencies receiving watch and warning information from Adak Observatory, Alaska, are:

1. Adak Naval Station (also NAVFAC and Squadron)--by telephone.
2. Communication Station (Adak)--by telephone.
3. Amchitka Island--by plane.
4. Atka Island--by radio or plane.

A1.8.1 Adak Naval Station

(1) Mail Address

Commanding Officer
U.S. Naval Station
FPO Seattle, Washington 98791

(2) Station Designator

COMMANDING OFFICER

(3) Methods of Communication

Primary: Telephone via direct hot line to Officer of the Day and Commanding Officer, Adak Naval Station, Alaska.

First Alternate: Radio link with the Officer of the Day Quarter Deck, Adak Naval Station.

Second Alternate: Courier to office of Officer of the Day, Adak Naval Station.

NOTES AND CHANGES:

A1.8.2 Amchitka Island

(1) Mail Address

U.S. Fish and Wildlife Service
U.S. Naval Station
Adak Island
FPO Seattle, Washington 99791

(2) Station Designator

US FISH AND WILDLIFE
SERVICE HQ

(3) Method of Communication

Primary: Buzz island with aircraft.

NOTES AND CHANGES:

A1.8.3 Atka Island

(1) Mail Address

Resident School Official
Atka Island, Aleutian Islands
FPO Seattle, Washington 98791

(2) Station Designator

RESIDENT SCHOOL OFFICIAL

(3) Method of Communication

Primary: Call via high frequency radio patch during the daylight hours. Buzz island with a search and rescue plane from Adak NAVSTA at night.

NOTES AND CHANGES:

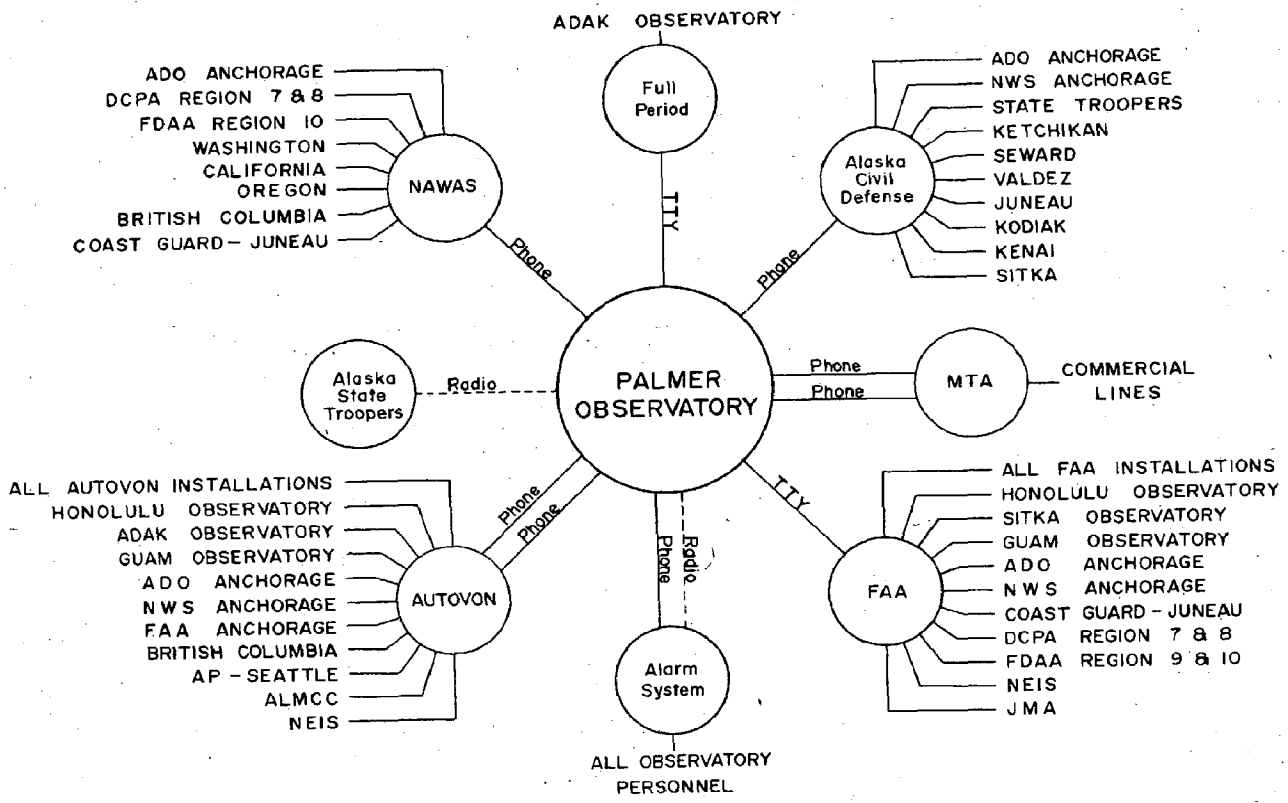

Figure 6.--Palmer Observatory Communication System

APPENDIX B. PARTICIPATION BY SEISMOGRAPH AND TIDE STATIONS IN THE TSUNAMI WARNING SYSTEM

B1. SEISMOGRAPH STATIONS

Name	Date joined	Date left
College, Alaska	Aug. 12, 1948	
Honolulu, Hawaii	Aug. 12, 1948	
Sitka, Alaska	Aug. 12, 1948	
Tucson, Arizona	Aug. 12, 1948	
Berkeley, California	Sept. 8, 1948	
Pasadena, California	Between Aug. 12, 1948, and Nov. 15, 1949	
Tokyo, Japan	June 8, 1949	
Guam, Mariana Islands	June 9, 1950	Oct. 1, 1955
Adak, Alaska	Jan. 4, 1951	Mar. 17, 1955
Huancayo, Peru	Sept. 12, 1952	
Manila, Republic of the Philippines	Nov. 2, 1953	
Suva, Fiji	Aug. 15, 1958	Nov. 29, 1962
Guam, Mariana Islands	Apr. 7, 1960	
Apia, Western Samoa	Aug. 4, 1960	
Papeete, Tahiti	Nov. 22, 1960	
Victoria, British Columbia	Nov. 22, 1960	
Santiago, Chile	Feb. 2, 1961	
Hong Kong	Aug. 3, 1961	
Adak, Alaska	July 19, 1966	
Newport, Washington	Jan. 30, 1967	
Palmer, Alaska	Sept. 2, 1967	
Gilmore Creek, Alaska	Oct. 14, 1967	
Kodiak, Alaska	Feb. 14, 1968	
La Plata, Argentina	June 25, 1969	
Noumea, New Caledonia	July 16, 1969	
Easter Island	June 5, 1970	
Middleton Island, Alaska	June 22, 1970	
Granite Mountain, Alaska	Sept. 15, 1970	
Shemya, Alaska	Nov. 17, 1970	
Cape Sarichef, Alaska	Nov. 22, 1970	May 19, 1971
Wellington, New Zealand	Mar. 25, 1971	
Nikolski, Alaska	May 17, 1971	
Indian Mountain, Alaska	Aug. 8, 1971	
Nandi, Fiji	Aug. 19, 1971	
Black Rapids, Alaska	Sept. 13, 1971	
Tolsona, Alaska	Sept. 13, 1971	
Tatalina, Alaska	Aug. 10, 1972	
Sparrevohn, Alaska	Aug. 23, 1972	
Port Moller, Alaska	Sept. 5, 1972	
Fort Yukon, Alaska	Apr. 5, 1973	
Yakutat, Alaska	July 15, 1973	
Petropavlovsk, U.S.S.R.	Feb. 1, 1975	
Yuzhno-Sakhalinsk, U.S.S.R.	Feb. 1, 1975	

B2. TIDE STATIONS

Name	Date joined	Date left
Adak, Alaska	Aug. 12, 1948	
Attu, Alaska	Aug. 12, 1948	
Dutch Harbor, Alaska	Aug. 12, 1948	May 5, 1955
Hilo, Hawaii	Aug. 12, 1948	
Honolulu, Hawaii	Aug. 12, 1948	
Johnston Island	Aug. 12, 1948	
Midway Island	Aug. 12, 1948	
Palmyra Island	Aug. 12, 1948	Dec. 2, 1949
Sitka, Alaska	Aug. 12, 1948	
Kwajalein Atoll	Between Aug. 12, 1948, and Feb. 1, 1949	
Pago Pago	Between Aug. 12, 1948, and Feb. 1, 1949	
Guam, Mariana Islands	Between Feb. 1, 1949, and Mar. 22, 1949	
Balboa, Canal Zone	Apr. 18, 1949	
La Jolla, California	May 2, 1949	Feb. 26, 1970
Koror, Palau Islands	Between Mar. 22, 1949, and May 12, 1949	Nov. 26, 1950
Canton Island	May 18, 1949	Oct. 24, 1967
San Pedro, California	Aug. 2, 1949	
Kodiak, Alaska	Sept. 24, 1949	
Wake Island	May 29, 1950	
Crescent City, California	June 15, 1953	
Unalaska, Alaska	May 5, 1955	
Christmas Island	Mar. 15, 1957	July 16, 1969
Valparaiso, Chile	July 7, 1958	
Suva, Fiji	Oct. 6, 1958	Nov. 29, 1962
Apia, Western Samoa	Between July 19, 1957, and Nov. 1958	Dec. 18, 1959
Papeete, Tahiti	Between July 19, 1957, and Nov. 1958	Dec. 18, 1959
Pitcairn Island	Between July 19, 1957, and Nov. 1958	Dec. 18, 1959
Apia, Western Samoa	Aug. 4, 1960	
Papeete, Tahiti	Nov. 22, 1960	
Nawiliwili, Hawaii	Nov. 22, 1960	
Tofino, British Columbia	June 22, 1961	
Legaspi, Republic of the Philippines	July 11, 1961	
Hachinoe, Japan	Jan. 17, 1962	
Shimizu (Tosa), Japan	Jan. 17, 1962	
La Punta (Callao), Peru	July 10, 1962	
Minamitorishima, (Marcus Island)	Nov. 25, 1963	
Suva, Fiji	Nov. 25, 1963	
Antofagasta, Chile	June 14, 1967	
Arica, Chile	June 14, 1967	
Easter Island	June 14, 1967	
Puerto Montt, Chile	June 14, 1967	
Puerto Williams, Chile	June 14, 1967	
Punta Arenas, Chile	June 14, 1967	
Talcahuano, Chile	June 14, 1967	
Cold Bay, Alaska	Sept. 23, 1967	Mar. 1, 1972
Seward, Alaska	Sept. 23, 1967	
Shemya, Alaska	Sept. 23, 1967	
Acajutla, El Salvador	Aug. 16, 1968	
Moen Island, Truk Islands	Oct. 21, 1968	
Noumea, New Caledonia	July 16, 1969	
Malakal Island, Palau Islands	Aug. 25, 1969	

Name	Date joined	Date left
Yakutat, Alaska	Oct. 8, 1969	
Rikitea, Gambier Island	Nov. 25, 1969	
Baltra Island, Galapagos Islands	June 5, 1970	
Marsden Point, New Zealand	June 5, 1970	
Manzanillo, Colima, Mexico	Jan. 1, 1971	
Yap, West Caroline Islands	Jan. 1, 1971	
White Beach, Okinawa	Mar. 25, 1971	
Canton Island	July 6, 1972	
Sand Point, Alaska	Jan. 24, 1973	
Fort Point, San Francisco, California	June 20, 1973	
San Diego, California	Sept. 11, 1973	
Kushiro, Japan	Feb. 5, 1975	
Langaro Island, Canada	Mar. 15, 1974	
Socorro Island, Colima, Mexico	Feb. 1, 1975	

NOAA-S/T 76-1823