Exercise PACIFEX 10 Participant Handbook

A Pacific tsunami warning exercise: March 24, 2010

National Tsunami Hazard Mitigation Program Warning Coordination Subcommittee





NOTE: The contents of this handbook are patterned after the Exercise Pacific Wave 08 manual published by the Intergovernmental Oceanographic Commission. Citation: *Exercise Pacific Wave 08. A Pacific-wide Tsunami Warning and Communication Exercise, 28-30 October 2008.* IOC Technical Series No. 82. Paris, UNESCO, 2008; and the LANTEX09 tsunami exercise handbook.

Table of Contents

| 1. | Background | 1 |
|-----|---|----|
| 2. | Exercise Concept | 3 |
| | 2.1 Purpose | |
| | 2.2Objectives | |
| | 2.3Type of Exercise | |
| 3. | Exercise Outline | 5 |
| | 3.1 General | 5 |
| | 3.2 Master Schedule (Exercise Script) | 7 |
| | 3.3 Actions in Case of a Real Event | 8 |
| | 3.4 Resources | 8 |
| | 3.5 Media Arrangements | 8 |
| 4. | Post-Exercise Evaluation | |
| App | endix A: Example Tabletop Exercise | 10 |
| App | endix B: Scenario Description | 12 |
| | endix C: WCATWC and PTWC Dummy Messages | |
| App | endix D: WCATWC and PTWC Exercise Messages | 16 |
| V | WCATWC Messages | 16 |
| F | PTWC Pacific Messages | 52 |
| F | PTWC Hawaii Messages | 74 |
| App | endix E: WCATWC Web-based Products | 84 |
| | endix F: Sample Press Release for Local Media | |
| App | endix G: Post-Exercise Evaluation | 91 |

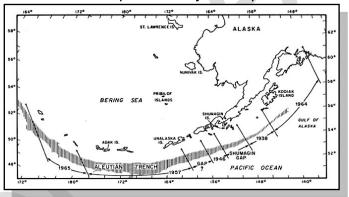
1. Background

This tsunami exercise is being conducted to assist tsunami preparedness efforts along the U.S. and Canadian Pacific coasts. Historical tsunami records from sources such as the National Oceanic and Atmospheric Administration's (NOAA) National Geophysical Data Center (NGDC) show that approximately 85% of the world's oceanic tsunamis occur in the Pacific Basin and surrounding seas. Tsunamis have impacted U.S. and Canadian Pacific coasts several times in the past century. Exercising emergency response plans in this region is an important part of tsunami preparedness.

The Pacifex 10 exercise simulates an earthquake located south of the Alaska Peninsula which generates a major tsunami. This earthquake occurs in the Aleutian trench which is a product of the Pacific "plate" to the south being gradually forced beneath the North American plate. Many earthquakes result

as a consequence, including some of the largest that have ever been recorded.

Typically, great earthquakes of magnitude 8.0 or more occur on an average of about 70 years' interval within different segments of the Aleutian arc. During each of these large



earthquakes, the accumulated strain is released along a certain length of the arc system, generally on the order of a few hundred miles (the 1964 Prince William Sound earthquake of magnitude 9.2 released strain along a total distance of over 400 miles, from near Valdez to Kodiak Island). It is believed that, over the centuries, the pattern of strain should fill in more-or-less uniformly along the entire system.

One segment of the arc that has inspired much debate is the area of the Shumagin Islands, off the tip of the Alaska Peninsula. The last great earthquake known to have occurred there was a magnitude 8.2 on November 10, 1938. This seismic quiescence along a 200-mile-long zone has for years caused scientists to predict a strong earthquake there "in the foreseeable future."

Survey data indicate that future rupture in a major earthquake is not certain. Strain accumulation during the 1980-85 intervals has been measured by means of trilateration surveys around the Shumagin Islands. No significant strain accumulation was detected, but experience at similar subduction zones and simple models of the subduction process suggest that a measureable amount of strain should have accumulated. The most likely explanation of the observation is that subduction there is either aseismic (slip without strain accumulation and resulting earthquakes) or episodic.

Because the Alaska Peninsula is so sparsely populated, the primary hazard to population centers would probably be from tsunamis that could be damaging throughout the Pacific basin. In previous major earthquakes throughout southern Alaska, most casualties have been inflicted by the tsunami as opposed to earthquake shaking and building collapse.

Contributing articles for the above summary can be found at <u>http://www.gi.alaska.edu/ScienceForum/ASF6/628.html</u>, <u>http://lib.bioinfo.pl/pmid:17750970</u>, and <u>http://earthquake.usgs.gov/earthquakes/states/events/1938_11_10.php</u>.

NOAA operates a tsunami warning system for the U.S. Pacific coasts and western Canada through its West Coast/Alaska Tsunami Warning Center (WCATWC) in Palmer, Alaska and for Hawaii, American Samoa, Guam and most Pacific countries through the Pacific Tsunami Warning Center (PTWC) in Ewa Beach, Hawaii. These Centers provide tsunami warning, watch, advisory, and information messages in approximately five to fifteen minutes after an earthquake's occurrence. Primary recipients of WCATWC Pacific messages include National Weather Service (NWS) coastal Weather Forecast Offices (WFO), state/territory warning points/emergency operation centers, the U.S. Coast Guard, Canada's Provincial Emergency Program, and the U.S. military. Primary recipients of PTWC Pacific messages include the NWS Weather Offices in Hawaii, American Samoa and Guam as well as designated Tsunami Warning Forecast Points in the countries of the Pacific. These agencies in turn transmit the appropriate messages to people potentially impacted by a tsunami.

NOAA and the National Tsunami Hazard Mitigation Program (NTHMP) are providing the framework for this exercise as a means for emergency responders along the Pacific coast to test and update tsunami response plans. High levels of vulnerability along the Pacific coast and the well known tsunami threat in the Pacific should provide a strong incentive for local jurisdictions to prepare for a tsunami.

This exercise will provide simulated tsunami warning messages from the WCATWC and PTWC triggered by a hypothetical earthquake near Alaska's Shumagin Islands. Exercises like this help ensure that the U.S./Canadian Pacific coasts are ready to respond in the unlikely case of a dangerous tsunami. The exercise does not in include other countries covered by the PTWC. Other recent tsunami exercises in the Pacific and Atlantic Basins have proven effective in strengthening preparedness levels of emergency management organizations.

2. Exercise Concept

2.1 Purpose

The purpose of the exercise is to improve the effectiveness of the tsunami warning system along the U.S./Canadian Pacific coasts. The exercise provides an opportunity for emergency management organizations along the Pacific coast to exercise their operational lines of communications, review their tsunami response procedures, and promote tsunami preparedness. Regular exercising of response plans is critical to maintain readiness for an emergency. This is particularly true for tsunamis which are infrequent, but high impact events. Every U.S. and Canadian Pacific emergency management organization (EMO) is encouraged to participate.

2.2 Objectives

Each organization can develop their objectives for the exercise depending on their level of involvement in the scenario. The following are the exercise's overarching objectives.

- Ensure message transmission from WCATWC and PTWC through primary contacts to coastal EMOs.
- Test tsunami response plans for those Pacific EMOs that have developed plans, and provide a catalyst for EMOs that have not developed one.
- Coastal EMOs review, discuss, and evaluate the various communication alternatives for receiving and disseminating tsunami messages.
- Coastal EMOs review, discuss, and evaluate potential response actions and challenges.
- Identify processes to issue local all-clear notices.

2.3 Type of Exercise

The exercise should be carried out such that communications and decision making at various organizational levels are exercised and conducted without disrupting or alarming the general public. Individual localities, however, may at their discretion elect to extend the exercise down to the level of testing local notification systems such as sirens or loudspeakers.

Exercises stimulate the development, training, testing, and evaluation of Disaster Plans and Standard Operating Procedures. Exercise participants may use their own past multi-hazard drills (e.g. flood, hurricane, earthquake, etc.) as a framework to conduct PACIFEX 10.

Exercises can be conducted at various scales of magnitude and sophistication. The following are examples of types of exercises conducted by EMOs.

- 1. Orientation Exercise (Seminar): An Orientation Exercise lays the groundwork for a comprehensive exercise program. It is a planned event, developed to bring together individuals and officials with a role or interest in multi-hazard response planning, problem solving, development of standard operational procedures (SOPs), and resource integration and coordination. An Orientation Exercise will have a specific goal and written objectives and result in an agreed upon Plan of Action.
- 2. **Drill:** The Drill is a planned activity that tests, develops, and/or maintains skills in a single or limited emergency response procedure. Drills generally involve operational response of single departments or agencies. Drills can involve internal notifications and/or filed activities.
- 3. **Tabletop Exercise:** The Tabletop Exercise is a planned activity in which local officials, key staff, and organizations with disaster management responsibilities are presented with simulated emergency situations. It is usually informal, in a conference room environment, and is designed to elicit constructive discussion from the participants. Participants will examine and attempt to resolve problems, based on plans and procedures, if they exist. Individuals are encouraged to discuss decisions in depth with emphasis on slow-paced problem solving, rather than rapid, real time decision-making. A Tabletop Exercise should have specific goals, objectives, and a scenario narrative (see Appendix A for a Sample Tabletop Exercise Outline).
- 4. Functional Exercise: A Functional Exercise is a planned activity designed to test and evaluate organizational capacities. It is also utilized to evaluate the capability of a community's emergency management system by testing the Emergency Operations Plan (EOP). It is based on a simulation of a realistic emergency situation that includes a description of the situation (narrative) with communications between players and simulators. The Functional Exercise gives the players (decision-makers) a fully simulated experience of being in a major disaster event. It should take place at the appropriate coordination location (i.e. emergency operations center, emergency command center, command post, master control center, etc.) and activate all the appropriate members designated by the plan. Both internal and external agencies (government, private sector, and volunteer agencies) should be involved. It requires players, controllers, simulators, and evaluators. Message traffic will be simulated and inserted by the control team for player response/actions, under real It may or may not include public evacuations. time constraints. А Functional Exercise should have specific goals, objectives, and scenario narrative.
- **5. Full-scale Exercise:** A full-scale Exercise is the culmination of a progressive exercise program that has grown with the capacity of the community to conduct exercises. A Full-Scale exercise is a planned activity in a "challenging" environment that encompasses a majority of the emergency management functions. This type of exercise involves the

actual mobilization and deployment of the appropriate personnel and resources needed to demonstrate operational capabilities. EOCs and other command centers are required to be activated. A Full-scale Exercise is the largest, costliest, and most complex exercise type. It may or may not include public evacuations.

| Style | Planning Period | Duration | Comments |
|-------------------------|--------------------|----------------|---------------------------------------|
| Orientation Exercise | 2 wks | 1 day | Individual or mixed groups |
| Drill | 2 days | 1 day | Individual technical groups generally |
| Tabletop Exercise | 2 weeks | 1-3 days | Single or multiple agency |
| Functional Exercise | 1-2 months | 1-5 days | Multiple Agency participation |
| Full-scale Exercise | 2-6 months | 1 day/ week | Multiple Agency participation |

Example Time Frames for Different Exercise Types

3. Exercise Outline

3.1 General

The scenario will start with a magnitude 9.0 earthquake located near Alaska's Shumagin Islands at 55.0N 157.0W. A large tsunami with coastal amplitudes exceeding 3.0 meters in places occurs along the U.S. and Canadian Pacific coasts. The earthquake occurs at 1700 UTC on March 24, 2010. The tsunami inundates large sections of land in the epicentral region and also significantly impacts U.S. and Canadian regions to the south including Hawaii. This is a realistic scenario for a major Alaskan earthquake which is discussed in greater detail in Appendix B.

WCATWC and PTWC will not issue live messages during the exercise other than to issue an initial "dummy" message over standard communication routes to start the exercise at 1705 UTC on March 24, 2010. The content of the dummy message for each Center is given in Appendix C. The dummy message will indicate that exercise participants should refer to the first message provided in this handbook. From then on, participants should follow the schedule in Table 1 to look at new messages. Table 1 is the timeline for when messages would be issued by WCATWC and PTWC if this were a real event and should be used by EMOs to drive the exercise timing. The warning messages (as shown in Appendix D) cover a 9-hour period, though in an actual event they would likely continue longer. World Meteorological Organization (WMO) and Advanced Weather Interactive Processing System (AWIPS) headers used in the dummy message are listed in Table 2.

During real events, the WCATWC issues two official products each time a message is issued. The first, and the ones provided in Appendix D, are known as the standard message. This message is a segmented message which includes encoded NWS zones and their level of threat in the lower section of the message. The segmentation is used for automated processing systems which parse NWS products. The standard product also lists expected arrival times. The second product is known as the public message. This message has no segmentation and is written in a non-tabular, easier-to-read format. The products contain the same basic information. EMOs generally use the standard product for warning response as it has more complete information. WCATWC also issues additional graphical and web-based products to its web site. Examples of these are shown in Appendix E.

During Pacific events, PTWC also issues two official products. The first is an international product that covers Hawaii, American Samoa, Guam, and all other countries in the Pacific except Canada. The second is a product specifically for the State of Hawaii. These products are designed and intended for EMOs. Both types of products for this exercise are provided in Appendix D.

Participants may elect to exercise using their own timelines in order to achieve their particular objectives. For example, a particular EMO's exercise control may choose to feed the WCATWC and/or PTWC bulletins into the exercise at times of their own choosing, or alternatively put them in envelopes with the time they must be opened written on each, with each key participant agency having their own set of envelopes. The messages, provided in Appendix D, will facilitate this approach.

EMOs are encouraged to participate to ensure response plans are in order. Estimated tsunami arrival times to several U.S. and Canadian Pacific locations are included in the WCATWC and PTWC messages (Appendix E contains a list of arrival times to more Pacific locations which would be available over the web during an event as well as a travel time map). In addition, EMOs are welcome to modify estimated arrival times and/or wave amplitudes to suit their exercise – for example, to have the tsunami arrive sooner and with larger amplitude. Other exercise injects, such as tsunami damage reports, are also encouraged.

This exercise provides an excellent opportunity for local jurisdictions to consider other tsunami and/or earthquake preparedness activities including:

- Testing local warning/siren systems,
- Conducting outreach and education on tsunami and/or earthquakes, and
- Practicing "drop, cover, and hold" drills and/or tsunami evacuations with schools, citizen groups, or agencies.

On the morning of March 24, 2010, the states of Alaska and California (Del Norte, Humboldt, and Mendocino counties only) will also be conducting live code tsunami warning emergency alert system (EAS) testing. These EAS tests will include extensive media preparation prior to the test to prepare and educate the public. The EAS tests will be conducted only once and will be limited to the transmission of a pre-scripted text message and audio override on local broadcast channels to ensure that transmission devices are properly configured for delivery of a tsunami warning.

3.2 Master Schedule (Exercise Script)

Table 1: Scenario Timeline

Tsunami generated by a magnitude 9.0 earthquake with epicenter at 55.0°N, 157.00°W occurring on March 24, 2010 at 1700 UTC.

| Date (UTC) | Time (UTC) | | WCAT Messa | | | PTW Pacit Produ | fic | | PTW Haw Prod | aii |
|---------------|---------------|----|---------------|-------|----|-----------------------|-------|----|--------------------|-------|
| X / | () | # | Туре | Dummy | # | Туре | Dummy | # | Туре | Dummy |
| 03/24/2010 | 1700 | | | EAR | TH | QUAK | E OCC | UR | s | |
| 03/24/2010 | 1705 | 01 | WWA | Yes | 01 | EWW | No | 01 | WCH | Yes |
| 03/24/2010 | 1735 | 02 | WWA | No | | | | | | |
| 03/24/2010 | 1805 | 03 | WWA | No | 02 | PWW | No | 02 | WRN | No |
| 03/24/2010 | 1835 | 04 | WWA | No | | | | | | |
| 03/24/2010 | 1905 | 05 | WWA | No | 03 | PWW | No | 03 | WRN | No |
| 03/24/2010 | 1935 | 06 | WWA | No | | | r | | | |
| 03/24/2010 | 2005 | 07 | 07 WWA N | | 04 | PWW | No | 04 | WRN | No |
| 03/24/2010 | 2035 | 08 | 08 WWA No | | | | | | | |
| 03/24/2010 | 2105 | 09 | WWA | No | 05 | PWW | No | 05 | WRN | No |
| 03/24/2010 | 2135 | 10 | WWA | No | | | | | | |
| 03/24/2010 | 2205 | 11 | WWA | No | 06 | PWW | No | 06 | WRN | No |
| 03/24/2010 | 2235 | 12 | WWA | No | | | | | | |
| 03/24/2010 | 2305 | 13 | WWA | No | 07 | PWW | No | 07 | WRN | No |
| 03/24/2010 | 2335 | 14 | WWA | No | | | | | | |
| 03/25/2010 | 0005 | 15 | WWA | No | 08 | PWW | No | 08 | WRN | No |
| 03/25/2010 | 0035 | 16 | WWA | No | | | | | | |
| 03/25/2010 | 0105 | 17 | WWA | No | 09 | PWW | No | 09 | WRN | No |
| 03/25/2010 | 0135 | 18 | WWA | No | | | | | | |
| 03/25/2010 | 0205 | 19 | Can | No | 10 | PWW | No | 10 | CAN | No |

WCATWC Message Types:

WWA Warning/Watch/Advisory

Can WWA Cancellation

PTWC Pacific Message Types:

EWW Expanding Warning/Watch

PWW Pacific-Wide Warning

PTWC Hawaii Message Types:

WCH Tsunami Watch

- WRN Tsunami Warning
- CAN Warning Cancellation

Dummy:

- Yes Dummy Issued
- No Dummy Not Issued

Table 2: Product Types

Product Types Issued for Dummy Message with Transmission Methods

| Center | WMO ID | AWIPS ID | NWWS | GTS | EMWIN | Fax | Email | | |
|-------------|------------------------------------|-----------------------------------|------|-----|-------|-----|-------|--|--|
| WCATWC | WEPA41 PAAQ | TSUWCA | Yes | Yes | Yes | Yes | Yes | | |
| PTWC | WEHW40 PHEB | WEHW40 PHEB TSUHWX Yes Yes Yes No | | | | | | | |
| NWWS GTS | NOAA Weather W Global Telecommu | | tem | | | | | | |

EMWIN Emergency Manager's Weather Information Network

3.3 Actions in Case of a Real Event

In the case of a real event occurring just prior to or during the exercise, WCATWC and PTWC will issue their normal message products for the real event. Such messages will be given full priority and a decision will be made by each Center whether to issue the initial dummy message and to continue providing any other support for the exercise. All documentation and correspondence relating to this exercise is to be clearly identified as "**PACIFEX 10**" and "**Exercise**."

3.4 Resources

Although EMOs will have advance notice of the exercise and may elect to stand up a special dedicated shift to allow normal core business to continue uninterrupted, it is suggested that realistic resource levels be deployed in order to reflect some of the issues that are likely to be faced in a real event.

Questions on the exercise can be addressed to:

| Jim Goltz | CA EMA, Tsunami PM | 626-356-3810 | jim.goltz@oes.ca.gov |
|------------------|----------------------|--------------|----------------------------------|
| Paul Whitmore | WCATWC Director | 907-745-4212 | paul.whitmore@noaa.gov |
| Bill Knight | WCATWC TWSO | 907-745-4212 | william.knight@noaa.gov |
| James Waddell | WCATWC Exercise Rep. | 907-745-4212 | <u>james.waddell@noaa.gov</u> |
| Chip McCreery | PTWC Director | 808-689-6655 | <u>charles.mccreery@noaa.gov</u> |
| Stuart Weinstein | PTWC TWSO | 808-689-6655 | stuart.weinstein@noaa.gov |
| Gerard Fryer | PTWC Exercise Rep. | 808-689-6655 | gerard.fryer@noaa.gov |

or to your state Emergency Management Organization tsunami mitigation specialist.

3.5 Media Arrangements

One advantage in conducting exercises is that it provides a venue to promote awareness of the exercise topic. Many coastal residents may not realize that a tsunami warning system exists for their region, let alone the proper response. Communities may wish to invite their local media to the exercise to promote local awareness of the tsunami hazard. Appendix F contains a sample press release which can be adapted as necessary. NOAA will issue a press release several days before the exercise describing the exercise and its purpose.

4 Post-Exercise Evaluation

All participating agencies are requested to provide brief feedback on the exercise. This feedback will assist the NTHMP and NOAA in the evaluation of PACIFEX 10 and the development of subsequent exercises, and help response agencies document lessons learned.

Exercise Evaluation Forms are included in Appendix G. Forms should be filled out by Friday, April 9, 2010 and returned to:

For Alaska, the U.S. West Coast, and the west coast of Canada

WCATWC Director NOAA/West Coast/Alaska Tsunami Warning Center 910 South Felton Street Palmer, Alaska 99645

FAX: 907-745-6071

Or scanned and emailed to paul.whitmore@noaa.gov.

For Hawaii

PTWC Director NOAA Pacific Tsunami Warning Center 91-270 Fort Weaver Road Ewa Beach, HI 96706

Fax: 808-689-4543

Or scanned and emailed to charles.mccreery@noaa.gov

Exercise Evaluation Forms are designated as "For Official Use Only" and will not be further distributed by NOAA or the NTHMP.

Appendix A. Example Table Top Exercise

Tabletop Exercise Development Steps

Source: California Office of Emergency Services

A Tabletop Exercise is a planned activity in which local officials, key staff, and organizations with disaster management responsibilities are presented with simulated emergency situations. It is usually informal and slow paced, in a conference room environment, and is designed to elicit constructive discussion from the participants to assess plans, policies, and procedures. Participants will examine and attempt to resolve problems, based on plans and procedures, if they exist. Individuals are encouraged to discuss decisions in depth based on their organization's Standard Operating Procedures (SOPs), with emphasis on slow-paced problem solving, rather than rapid, real time decision-making. An Exercise Controller (moderator) introduces a simulated tsunami scenario to participants via written message, simulated telephone or radio call, or by other means. Exercise problems and activities (injects) are further introduced. Participants conduct group discussions, and resolution is generally agreed upon, and then summarized by a group leader. A Tabletop Exercise should have specific goals, objectives, and a scenario narrative.

The following provides a Tabletop Exercise structure with sample text and example.

1. Vulnerability Analysis: Problem Statement

An example for a hurricane might be:

Due to the recent Hurricane incidents that the Southeast region of the United States, an awareness of the threat risk involved in these disasters has become more apparent, therefore the need for evacuation system is vital. The state of Louisiana continues it ongoing tasks of planning, preparing, and training for Hurricane preparedness.

2. Purpose (Mission): Intent, what you plan to accomplish (Policy Statement)

An example for a hurricane might be:

The State of Louisiana has realized and recognizes the need for a more efficient and effective evacuation system, and is responding with this Comprehensive Exercise Plan. These events will include seminars, workshops, tabletop exercise, functional and full-scale exercises within an 18-month time frame, under the State Homeland Security grant program.

3. Scope: Exercise Activities Agencies Involved Hazard Type Geographic Impact Area

An example might be:

Emergency Services coordinators at local levels of government will identify representative jurisdictions from each of the six mutual aid regions located throughout the State to participate as host jurisdictions in a series of disaster preparedness exercises. These host jurisdictions will develop a progressive series of exercises each type building upon the previous type of exercise. The process will begin with a vulnerability analysis for each jurisdiction and continue through a progression of exercise activities including; orientation seminars, workshops, tabletop and functional exercises. The eventual objective of these activities will be to reduce disaster impacts to their populations and city infrastructure. All events will be evaluated utilizing US Homeland Security Exercise Evaluation Program (HSEEP) after action reporting (AAR) standards. Steps for corrective actions will be made a part of the after action process and report. Surrounding jurisdictions in the mutual aid area will act as exercise design team members, exercise evaluators, or exercise observers for the purpose of information transfer to increase their operational readiness. Jurisdictions will participate on a rotational basis every two years to provide the opportunity for multiple jurisdiction participation.

4. Goals and Objectives:

Criteria for good objectives: Think SMART

- Simple (concise)
- Measurable
- Achievable (can this be done during the exercise?)
- Realistic (and challenging)
- Task Oriented (oriented to functions)

An example might be:

Comprehensive Exercise Program (CEP) Objectives

• To improve operational readiness

• To improve multi-agency coordination and response capabilities for effective disaster response

• To identify communication pathways and problem areas pre-event between local jurisdictions and operational area, regional and state emergency operations centers

• To establish uniform methods for resource ordering, tracking and supply for agencies involved at all levels of government.

5. Narrative:

The Narrative should describe the following:

- Triggering emergency/disaster event
- Describe the environment at the time the exercise begins
- Provides necessary background information
- Prepares participants for the exercise
- Discovery, report: how do you find out?
- Advance notice?
- Time, location, extent or level of damage

6. Evaluation:

The Evaluation should describe the following:

- Objectives Based
- Train Evaluation Teams
- Develop Evaluation Forms
- 7. After Action Report (AAR): The AAR should be compiled using the evaluation reports
- 8. Improvement Plan (IP): The IP should reduce vulnerabilities.

Appendix B. Scenario Description

The Alaska tsunami forecast model was used to simulate the tsunami generated by a magnitude 9.0 earthquake 105 miles SE of Chignik, Alaska near the Shumagin Islands with an epicenter at 55.0N and 157.0W. Other fault parameters are:

| Length: | 575km |
|---------|-------------------------------|
| Width: | 145km |
| Depth: | 5km |
| Strike: | 244 [°] |
| Dip: | 15 [°] |
| Slip: | 90° |
| Moment: | 3.55x10 ²⁹ dyne-cm |
| | |

The model was computed using a 4-minute resolution grid in the open ocean and additional 15-second resolution grids along the U.S./Canadian Pacific coasts region.

The following figure displays the maximum modeled deep-ocean tsunami amplitude throughout the Pacific. Coastal amplitudes would be significantly larger and are provided for the North American and Hawaiian coasts below.

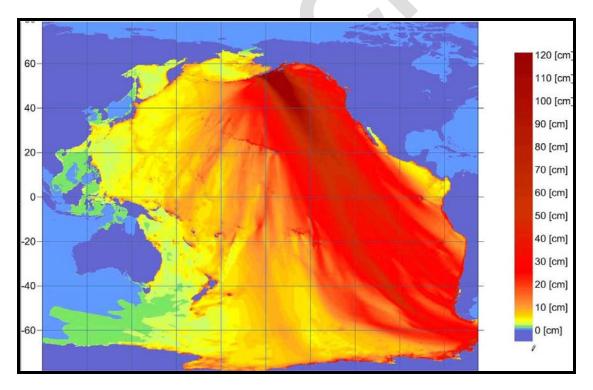


Figure B1: Maximum modeled tsunami amplitude throughout the Pacific

The following table provides maximum modeled amplitudes at several points throughout the WCATWC exercise area and Hawaii. Amplitude indicates the level of the tsunami above normal sea level at the coast. Coastal amplitudes may induce vertical runups along shore that are approximately double the forecast amplitude.

| Location | Amplitude (m) | Location | Amplitude (m) |
|-----------------------|---------------|-------------------------|---------------|
| Attu, AK | 0.38 | Empire, OR | 0.39 |
| Shemya, AK | 0.07 | Charleston, OR | 0.83 |
| Adak Dock, AK | 0.35 | Bastendorf Beach, OR | 2.29 |
| St. Paul, AK | 0.15 | Port Orford, OR | 1.44 |
| Nikolski, AK | 0.34 | Crescent City TG, OR | 1.65 |
| Unalaska TG, AK | 0.80 | Trinidad, CA | 1.85 |
| Akutan, AK | 0.37 | South Spit, CA | 1.54 |
| False Pass, AK | 0.60 | Humboldt Bay, CA | 1.15 |
| Sanak, AK | 1.31 | Eureka, CA | 0.52 |
| Cold Bay, AK | 0.73 | Ten Mile River, CA | 1.73 |
| King Cove, AK | 1.71 | Elk, CA | 1.76 |
| Belkofski, AK | 1.91 | Arena Cove, CA | 1.48 |
| Sand Point, AK | 3.02 | Bodega Bay, CA | 1.48 |
| Ivanof Bay, AK | 4.32 | Fort Point, CA | 1.02 |
| Perryville, AK | 2.90 | Sausalito, CA | 0.52 |
| Kodiak USCG TG, AK | 0.96 | Alameda, CA | 0.35 |
| Port Lions, AK | 1.25 | Pacifica, CA | 1.52 |
| Ouzinkie, AK | 0.90 | Half Moon Bay, CA | 2.03 |
| English Bay, AK | 0.80 | Rio Del Mar, CA | 2.83 |
| Seldovia, AK | 0.90 | Santa Cruz, CA | 1.75 |
| Homer Spit, AK | 0.79 | Monterey, CA | 0.94 |
| Halibut Cove, AK | 0.86 | Morro Bay, CA | 2.49 |
| Seward, AK | 0.75 | Point San Luis, CA | 1.57 |
| Whittier, AK | 0.28 | Pismo Beach, CA | 2.45 |
| Tatitlek, AK | 0.23 | Surf, CA | 1.60 |
| Valdez, AK | 0.29 | Naples, CA | 0.64 |
| Cordova, AK | 0.20 | Santa Barbara, CA | 0.76 |
| Icy Bay, AK | 1.29 | Malibu, CA | 0.44 |
| Yakutat dock, AK | 0.57 | Santa Monica, CA | 0.71 |
| Elfin Cove, AK | 0.64 | Los Angeles, CA | 0.49 |
| Gustavus, AK | 0.50 | Laguna Beach, CA | 0.64 |
| Auke Bay, AK | 0.42 | La Jolla, CA | 1.03 |
| Sitka dock, AK | 1.56 | Ballast Point, CA | 0.77 |
| | 0.53 | San Diego Navy Pier TG, | 0.40 |
| Langara, BC | 0.55 | CA | 0.40 |
| Cape Scott, BC | 0.74 | Midway Island | 0.42 |
| Tofino, BC | 0.85 | Hanalei, HI | 0.83 |
| Neah Bay, WA | 0.50 | Nawiliwili TG, HI | 0.67 |
| Port Angeles, WA | 0.38 | Haleiwa, HI | 0.83 |
| Bellingham, WA | 0.40 | Moku O Loe Is. TG, HI | 0.75 |
| Everett, WA | 0.14 | Honolulu TG, HI | 0.51 |
| Seattle – Pier 48, WA | 0.16 | Kalaupapa, HI | 0.60 |
| Moclips, WA | 1.26 | Kahului TG, HI | 1.89 |
| Westport, WA | 0.57 | Kihei, HI | 1.13 |
| Long Beach, WA | 1.19 | Kawaihae TG, HI | 0.63 |

| East Astoria, OR | 0.31 | Hilo TG, HI | 1.20 |
|------------------|------|-------------|------|
| Cannon Beach, OR | 1.58 | | |
| Newport TG, OR | 1.95 | | |
| Yachats, OR | 1.45 | | |

14

Appendix C. WCATWC and PTWC Dummy Messages

WCATWC Dummy Message

WEPA41 PAAQ 241705 TSUWCA

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 1...TEST NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 1005 AM PDT WED MAR 24 2010

 \ldots pacifex 10 tsunami exercise message. Refer to wcatwc message 1 in the exercise handbook. This is an exercise only \ldots

THIS MESSAGE IS BEING USED TO START OFF THE PACIFEX 10 PACIFIC TSUNAMI EXERCISE. THIS WILL BE THE ONLY EXERCISE MESSAGE TRANSMITTED FROM THE WEST COAST/ALASKA TSUNAMI WARNING CENTER. EXERCISE PARTICPANTS SHOULD REFER TO THE SCENARIO TIMELINE IN THE HANDBOOK FOR FUTURE MESSAGES. THE HANDBOOK IS AVAILABLE AT THE WEB SITE WCATWC.ARH.NOAA.GOV. THE EXERCISE PURPOSE IS TO PROVIDE EMERGENCY MANAGEMENT A REALISTIC SCENARIO TO TEST TSUNAMI RESPONSE PLANS.

THIS IS ONLY AN EXERCISE.

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PTWC Dummy Message

WEHW40 PHEB 241705 TSUHWX

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 1...TEST NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 705 AM HST WED MAR 24 2010

... PACIFEX 10 TSUNAMI EXERCISE MESSAGE. REFER TO PTWC MESSAGE 1 IN THE EXERCISE HANDBOOK. THIS IS AN EXERCISE ONLY...

THIS MESSAGE IS BEING USED TO START OFF THE PACIFEX 10 PACIFIC TSUNAMI EXERCISE. THIS WILL BE THE ONLY EXERCISE MESSAGE TRANSMITTED FROM THE PACIFIC TSUNAMI WARNING CENTER. EXERCISE PARTICIPANTS SHOULD REFER TO THE SCENARIO TIMELINE IN THE HANDBOOK FOR FUTURE MESSAGES. THE HANDBOOK IS AVAILABLE AT THE WEB SITE WCATWC.ARH.NOAA.GOV. THE EXERCISE PURPOSE IS TO PROVIDE EMERGENCY MANAGEMENT A REALISTIC SCENARIO TO TEST TSUNAMI RESPONSE PLANS.

THIS IS ONLY AN EXERCISE.

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Appendix D. WCATWC and PTWC Exercise Messages

WCATWC Messages

The following messages, created for the PACIFEX 10 tsunami exercise, are representative of the official standard products issued by the West Coast and Alaska Tsunami Warning Center during a large magnitude 9.0 earthquake and tsunami originating at 55.0°N, 157.0°W. During a real event, the Center would also issue graphical and html-based products to its web site and via RSS.

WCATWC Message #1

INITIAL WAVE ARRIVAL.

WEPA41 PAAQ 241705 TSUWCA BULLETIN TSUNAMI MESSAGE NUMBER 1 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 905 AM AKDT WED MAR 24 2010 ... A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA... ... A TSUNAMI WATCH IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON AND BRITISH COLUMBIA FROM THE CALIFORNIA-MEXICO BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA... RECOMMENDED ACTIONS IT IS NOT KNOWN - REPEAT NOT KNOWN - IF A TSUNAMI EXISTS BUT A TSUNAMI MAY HAVE BEEN GENERATED. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES. PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND. - PERSONS IN TSUNAMI WATCH AREAS SHOULD STAY ALERT FOR SUPPLEMENTAL INFORMATION. THIS MESSAGE IS BASED MAINLY ON EARTHOUAKE DATA. AS MORE INFORMATION BECOMES AVAILABLE THE WARNING AND WATCH AREAS WILL BE REFINED. PRELIMINARY EARTHQUAKE PARAMETERS MAGNITUDE -9.00900 AKDT MAR 24 2010 TIME 1000 PDT MAR 24 2010 1700 UTC MAR 24 2010 LOCATION - 55.0 NORTH 157.0 WEST 105 MILES/169 KM SE OF CHIGNIK ALASKA 500 MILES/805 KM SW OF ANCHORAGE ALASKA DEPTH - 28 MILES/45 KM THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED. TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE

TSUNAMI WATCHES ARE AN ADVANCE NOTICE TO AREAS THAT COULD BE IMPACTED BY A TSUNAMI AT A LATER TIME. WATCH AREAS MAY BE UPGRADED TO WARNING OR ADVISORY STATUS - OR CANCELED - BASED ON NEW INFORMATION OR ANALYSIS. PERSONS IN A WATCH AREA SHOULD CLOSELY

FOLLOW SUBSEQUENT TSUNAMI MESSAGES.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-241805-/T.NEW.PAAQ.TS.W.0011.100324T1705Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA 905 AM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW.

| SAND PTAK | 1025 AKDI | ' MAR 24 | VALDEZ-AK | | 1130 | AKDT | MAR | 24 | | |
|---|-----------|----------|--------------|--|------|------|-----|----|--|--|
| DUTCH HARBOR-AK | 1045 AKDT | ' MAR 24 | LANGARA-BC | | 1230 | PDT | MAR | 24 | | |
| KODIAK-AK | 1046 AKDT | ' MAR 24 | CORDOVA-AK | | 1140 | AKDT | MAR | 24 | | |
| COLD BAY-AK | 1108 AKDT | ' MAR 24 | SHEMYA-AK | | 1153 | AKDT | MAR | 24 | | |
| ADAK-AK | 1110 AKDT | ' MAR 24 | HOMER-AK | | 1204 | AKDT | MAR | 24 | | |
| SEWARD-AK | 1111 AKDT | ' MAR 24 | KETCHIKAN-AK | | 1228 | AKDT | MAR | 24 | | |
| YAKUTAT-AK | 1120 AKDT | ' MAR 24 | JUNEAU-AK | | 1230 | AKDT | MAR | 24 | | |
| SITKA-AK | 1121 AKDT | ' MAR 24 | | | | | | | | |
| FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE | | | | | | | | | | |
| WCATWC, ARH, NOAA, GOV | | | | | | | | | | |

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PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-170-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-241805-/T.NEW.PAAQ.TS.A.0011.100324T1705Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA 905 AM AKDT WED MAR 24 2010

...A TSUNAMI WATCH IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON AND BRITISH COLUMBIA FROM THE CALIFORNIA-MEXICO BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA...

PERSONS IN TSUNAMI WATCH AREAS SHOULD STAY ALERT FOR SUPPLEMENTAL INFORMATION.

TSUNAMI WATCHES ARE AN ADVANCE NOTICE TO AREAS THAT COULD BE IMPACTED BY A TSUNAMI AT A LATER TIME. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WATCH ARE PROVIDED BELOW.

TOFINO-BC 1356 PDT MAR 24 CRESCENT CITY-CA 1425 PDT MAR 24 NEAH BAY-WA 1408 PDT MAR 24 SAN FRANCISCO-CA 1517 PDT MAR 24 PDT MAR 24 CHARLESTON-OR 1416 SANTA BARBARA-CA 1532 PDT MAR 24 PDT MAR 24 SEASIDE-OR 1421 LA JOLLA-CA 1559 PDT MAR 24 WESTPORT-WA 1422 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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WCATWC Message #2

WEPA41 PAAQ 241735 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 2 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 935 AM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA...
- ...A TSUNAMI WATCH IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON AND BRITISH COLUMBIA FROM THE CALIFORNIA-MEXICO BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
- PERSONS IN TSUNAMI WATCH AREAS SHOULD STAY ALERT FOR SUPPLEMENTAL INFORMATION.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -DEEP-WATER PRESSURE SENSORS INDICATE THAT A TSUNAMI HAS BEEN GENERATE APPROXIMATELY 105MI/170KM SOUTHEAST OF CHIGNIK AK.

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGINETODE | 5.0 |
|------------|---|
| TIME - | 0900 AKDT MAR 24 2010 |
| | 1000 PDT MAR 24 2010 |
| | 1700 UTC MAR 24 2010 |
| LOCATION - | 55.0 NORTH 157.0 WEST |
| | 105 MILES/169 KM SE OF CHIGNIK ALASKA |
| | 500 MILES/805 KM SW OF ANCHORAGE ALASKA |
| DEPTH - | 28 MILES/45 KM |
| | |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI WATCHES ARE AN ADVANCE NOTICE TO AREAS THAT COULD BE IMPACTED BY A TSUNAMI AT A LATER TIME. WATCH AREAS MAY BE UPGRADED TO WARNING OR ADVISORY STATUS - OR CANCELED - BASED ON NEW INFORMATION OR ANALYSIS. PERSONS IN A WATCH AREA SHOULD CLOSELY FOLLOW SUBSEQUENT TSUNAMI MESSAGES.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-241835-/T.CON.PAAQ.TS.W.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA 935 AM AKDT WED MAR 24 2010 ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW.

| SAND PTAK | 1025 AKD | MAR 2 | 24 VALDEZ-AK | 1130 AKDT | MAR 24 | | | | | |
|---|-----------|-------|-----------------|-----------|--------|--|--|--|--|--|
| DUTCH HARBOR-AK | 1045 AKD | MAR 2 | 24 LANGARA-BC | 1230 PDT | MAR 24 | | | | | |
| KODIAK-AK | 1046 AKD | MAR 2 | 24 CORDOVA-AK | 1140 AKDT | MAR 24 | | | | | |
| COLD BAY-AK | 1108 AKD | MAR 2 | 24 SHEMYA-AK | 1153 AKDT | MAR 24 | | | | | |
| ADAK-AK | 1110 AKD: | MAR 2 | 24 HOMER-AK | 1204 AKDT | MAR 24 | | | | | |
| SEWARD-AK | 1111 AKD: | MAR 2 | 24 KETCHIKAN-AK | 1228 AKDT | MAR 24 | | | | | |
| YAKUTAT-AK | 1120 AKD | MAR 2 | 24 JUNEAU-AK | 1230 AKDT | MAR 24 | | | | | |
| SITKA-AK | 1121 AKD | MAR 2 | 24 | | | | | | | |
| FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE | | | | | | | | | | |
| WCATWC.ARH.NOAA.GOV | | | | | | | | | | |

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PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-170-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-241835-/T.CON.PAAQ.TS.A.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA

935 AM AKDT WED MAR 24 2010

...A TSUNAMI WATCH IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON AND BRITISH COLUMBIA FROM THE CALIFORNIA-MEXICO BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA...

PERSONS IN TSUNAMI WATCH AREAS SHOULD STAY ALERT FOR SUPPLEMENTAL INFORMATION.

TSUNAMI WATCHES ARE AN ADVANCE NOTICE TO AREAS THAT COULD BE IMPACTED BY A TSUNAMI AT A LATER TIME. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WATCH ARE PROVIDED BELOW.

TOFINO-BC 1356 PDT MAR 24 CRESCENT CITY-CA 1425 PDT MAR 24 1408 1416 PDT MAR 24 SAN FRANCISCO-CA 1517 NEAH BAY-WA PDT MAR 24 PDT MAR 24 SANTA BARBARA-CA 1532 PDT MAR 24 CHARLESTON-OR PDT MAR 24 1421 LA JOLLA-CA PDT MAR 24 SEASTDE-OR 1559 WESTPORT-WA 1422 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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WCATWC Message #3

WEPA41 PAAQ 241805 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 3 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 1005 AM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON AND BRITISH COLUMBIA FROM THE OREGON-WASHINGTON BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA...

| А | ΤS | UNA | MI | WARN | JING | IS | IN | EFFECT | WH | ICH | INCI | LUDE | S THE | | |
|-------|-----|-----|-----|-------|------|------|------|----------|------|------|------|------|-------|-------|-------|
| CC |)AS | TAI | AF | REAS | OF | BRIT | TISH | I COLUME | BIA | AND | ALA | ASKA | FROM | I THE | NORTH |
| ΤI | P | OF | VAI | 1COU/ | /ER | ISLA | AND | BRITISH | I CO | DLUM | BIA | TO | ATTU | ALASI | KA |

...A TSUNAMI WATCH IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
- PERSONS IN TSUNAMI WATCH AREAS SHOULD STAY ALERT FOR SUPPLEMENTAL INFORMATION.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -DEEP-WATER PRESSURE SENSORS INDICATE THAT A TSUNAMI HAS BEEN GENERATE APPROXIMATELY 105MI/170KM SOUTHEAST OF CHIGNIK AK. FORECAST MODELS PROJECT THAT 3.2-9.6 FOOT/1-3 METER WAVES COULD DEVELOP ALONG THE WEST COASTS OF ALASKA - CANADA - WASHINGTON - OREGON AND CALIFORNIA. WAVES OF THIS SIZE ARE KNOWN TO CAUSE INUNDATION AND DAMAGE TO COASTAL STRUCTURES. TSUNAMIS ARE EXPECTED TO REACH PEAK SIZE ONE TO TWO HOURS AFTER THE EXPECTED ARRIVAL TIME.

| PRELIMINARY | E | ARTHQUAKE PARAM | ETERS | |
|-------------|---|-----------------|---------|------------------|
| MAGNITUDE | - | 9.0 | | |
| TIME | - | 0900 AKDT MAR 2 | 4 2010 | |
| | | 1000 PDT MAR 2 | 4 2010 | |
| | | 1700 UTC MAR 2 | 4 2010 | |
| LOCATION | - | 55.0 NORTH 157. | 0 WEST | |
| | | 105 MILES/169 K | M SE OF | CHIGNIK ALASKA |
| | | 500 MILES/805 K | M SW OF | ANCHORAGE ALASKA |
| DEPTH | - | 28 MILES/45 KM | | |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI WATCHES ARE AN ADVANCE NOTICE TO AREAS THAT COULD BE IMPACTED BY A TSUNAMI AT A LATER TIME. WATCH AREAS MAY BE UPGRADED TO WARNING OR ADVISORY STATUS - OR CANCELED - BASED ON NEW INFORMATION OR ANALYSIS. PERSONS IN A WATCH AREA SHOULD CLOSELY FOLLOW SUBSEQUENT TSUNAMI MESSAGES.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ110-156-153-150-130>135-170-WAZ503-506>511-001-514>517-021-241905-/T.CAN.PAAQ.TS.A.0011.000000T0000Z-000000000000/ /T.EXA.PAAQ.TS.W.0011.000000T0000Z-00000000000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE OREGON-WASHINGTON BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA 1005 AM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON AND BRITISH COLUMBIA FROM THE OREGON-WASHINGTON BORDER TO THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW. TOFINO-BC 1356 PDT MAR 24 1408 PDT MAR 24 WESTPORT-WA 1422 PDT MAR 24 NEAH BAY-WA FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV \$\$ PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-241905-/T.CON.PAAQ.TS.W.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA 1005 AM AKDT WED MAR 24 2010 ... A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE NORTH TIP OF VANCOUVER ISLAND BRITISH COLUMBIA TO ATTU ALASKA... PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND. TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW. SAND PT.-AK 1025 AKDT MAR 24 VALDEZ-AK 1130 AKDT MAR 24 DUTCH HARBOR-AK 1045 AKDT MAR 24 LANGARA-BC 1230 PDT MAR 24 1046 AKDT MAR 24 1140 AKDT MAR 24 KODIAK-AK CORDOVA-AK COLD BAY-AK 1108 AKDT MAR 24 SHEMYA-AK 1153 AKDT MAR 24 1110 AKDT MAR 24 1204 AKDT MAR 24 ADAK-AK HOMER-AK SEWARD-AK 1111 AKDT MAR 24 KETCHIKAN-AK 1228 AKDT MAR 24 1120 AKDT MAR 24 TUNEAU-AK 1230 AKDT MAR 24 YAKUTAT-AK 1121 AKDT MAR 24 SITKA-AK FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV \$\$ PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-241905-/T.CON.PAAQ.TS.A.0011.0000000000000000/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER 1005 AM AKDT WED MAR 24 2010 ... A TSUNAMI WATCH IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER... PERSONS IN TSUNAMI WATCH AREAS SHOULD STAY ALERT FOR SUPPLEMENTAL INFORMATION. TSUNAMI WATCHES ARE AN ADVANCE NOTICE TO AREAS THAT COULD BE IMPACTED BY A TSUNAMI AT A LATER TIME. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WATCH ARE PROVIDED BELOW. CHARLESTON-OR1416PDTMAR24SANFRANCISCO-CA1517SEASIDE-OR1421PDTMAR24SANTABARBARA-CA1532CRESCENTCITY-CA1425PDTMAR24LAJOLLA-CA1559 PDT MAR 24 PDT MAR 24 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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WCATWC Message #4

WEPA41 PAAQ 241835 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 4 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 1035 AM AKDT WED MAR 24 2010

... A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER...

... A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE OREGON-WASHINGTON BORDER TO DUTCH HARBOR ALASKA...

... A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES. - PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO

- HIGHER GROUND.
- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LAT LOCATION LON TIME AMPT.

SAND POINT AK 55.3 N 160.5 W 1825 9.66 FT/3.02 M FORECAST MODELS PROJECT THAT 3.2-9.6 FOOT/1-3 METER WAVES COULD DEVELOP ALONG THE WEST COASTS OF ALASKA - CANADA - WASHINGTON - OREGON AND CALIFORNIA. WAVES OF THIS SIZE ARE KNOWN TO CAUSE INUNDATION AND DAMAGE TO COASTAL STRUCTURES. TSUNAMIS ARE EXPECTED TO REACH PEAK SIZE ONE TO TWO HOURS AFTER THE EXPECTED ARRIVAL TIME. A 9.6-FOOT/3.0 METER TSUNAMI ALONGWITH STRONG OFFSHORE CURRENTS HAS BEEN REPORTED AT SAND POINT AK. Α PIER WAS WASHED AWAY AT THE LOCAL PORT. SEVERAL PEOPLE ARE MISSING AND PRESUMED DROWN.

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGNITUDE | | 9.0 |
|-----------|---|---|
| TIME | - | 0900 AKDT MAR 24 2010 |
| | | 1000 PDT MAR 24 2010 |
| | | 1700 UTC MAR 24 2010 |
| LOCATION | - | 55.0 NORTH 157.0 WEST |
| | | 105 MILES/169 KM SE OF CHIGNIK ALASKA |
| | | 500 MILES/805 KM SW OF ANCHORAGE ALASKA |
| DEPTH | - | 28 MILES/45 KM |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION

IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-241935-/T.CAN.PAAQ.TS.A.0011.000000T0000Z-0000000000000/ /T.EXA.PAAQ.TS.W.0011.000000T0000Z-000000000000/ /COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER 1035 AM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW.

CHARLESTON-OR 1416 PDT MAR 24 SAN FRANCISCO-CA 1517 PDT MAR 24 SEASIDE-OR 1421 PDT MAR 24 SANTA BARBARA-CA 1532 PDT MAR 24 CRESCENT CITY-CA 1425 PDT MAR 24 LA JOLLA-CA 1559 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PZZ110-156-153-150-130>135-170-PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-WAZ503-506>511-001-514>517-021-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-241935-/T.CON.PAAQ.TS.W.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE OREGON-WASHINGTON BORDER TO DUTCH HARBOR ALASKA 1035 AM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE OREGON-WASHINGTON BORDER TO DUTCH HARBOR ALASKA...

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| DUTCH HARBOR-AK | 1045 | AKDT | MAR | 24 | CORDOVA-AK | 1140 | AKDT | MAR | 24 |
|------------------|--------|-------|-------|------|--------------|------|------|-----|----|
| KODIAK-AK | 1046 | AKDT | MAR | 24 | HOMER-AK | 1204 | AKDT | MAR | 24 |
| COLD BAY-AK | 1108 | AKDT | MAR | 24 | KETCHIKAN-AK | 1228 | AKDT | MAR | 24 |
| SEWARD-AK | 1111 | AKDT | MAR | 24 | JUNEAU-AK | 1230 | AKDT | MAR | 24 |
| YAKUTAT-AK | 1120 | AKDT | MAR | 24 | TOFINO-BC | 1356 | PDT | MAR | 24 |
| SITKA-AK | 1121 | AKDT | MAR | 24 | NEAH BAY-WA | 1408 | PDT | MAR | 24 |
| VALDEZ-AK | 1130 | AKDT | MAR | 24 | WESTPORT-WA | 1422 | PDT | MAR | 24 |
| LANGARA-BC | 1230 | PDT | MAR | 24 | | | | | |
| FOR ARRIVAL TIME | S AT A | ADDIT | IONAI | L LC | CATIONS SEE | | | | |
| WCATWC.ARH.NOAA. | GOV | | | | | | | | |

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PKZ170-171-172-175-176-AKZ185-187-191-241935-/T.CAN.PAAQ.TS.W.0011.000000T0000Z-000000000000/ /T.NEW.PAAQ.TS.Y.0011.000000T0000Z-00000000000/

COASTAL AREAS BETWEEN AND INCLUDING DUTCH HARBOR ALASKA TO ATTU ALASKA 1035 AM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE ADVISORY ARE PROVIDED BELOW.

SHEMYA-AK 1153 AKDT MAR 24 ADAK-AK FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV 1110 AKDT MAR 24

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WCATWC Message #5

WEPA41 PAAQ 241905 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 5 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 1105 AM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LAT TIME AMPL LOCATION LON ____ _ _ _ _ _ _ _ _ ____ 1825 SAND POINT AK 55.3 N 160.5 W 10.2 FT/3.12 M 55.1 N 163.3 W KING COVE AK 1833 5.40 FT/1.65 M 57.8 N 3.90 FT/1.20 M 152.4 W KODTAK AK 1846 FORECAST MODELS PROJECT THAT 3.2-9.6 FOOT/1-3 METER WAVES COULD DEVELOP ALONG THE WEST COASTS OF ALASKA - CANADA - WASHINGTON - OREGON AND CALIFORNIA. WAVES OF THIS SIZE ARE KNOWN TO CAUSE INUNDATION AND DAMAGE TO COASTAL STRUCTURES. TSUNAMIS ARE EXPECTED TO REACH PEAK SIZE ONE TO TWO HOURS AFTER THE EXPECTED ARRIVAL TIME. A 3.0-FOOT/0.9 METER TSUNAMI ALONGWITH STRONG OFFSHORE CURRENTS HAS BEEN REPORTED AT KODIAK AK. KODIAK'S FISH-PROCESSING DOCK WAS SIGNIFICANTLY DAMAGED AND LOCAL FISHING BOATS ARE AWAITING A FLOATING PROCESSOR. KING COVE AK REPORTED A 5.5-FOOT/1.7-METER WAVE THAT CAUSED APPROXIMATELY \$1.2 MILLION DAMAGE TO LOCAL FISHING BOATS.

| PRELIMINARY EARTHQUAKE PARAMETERS | | | | | |
|-----------------------------------|---|---|--|--|--|
| MAGNITUDE | - | 9.0 | | | |
| TIME | - | 0900 AKDT MAR 24 2010 | | | |
| | | 1000 PDT MAR 24 2010 | | | |
| | | 1700 UTC MAR 24 2010 | | | |
| LOCATION | _ | 55.0 NORTH 157.0 WEST | | | |
| | | 105 MILES/169 KM SE OF CHIGNIK ALASKA | | | |
| | | 500 MILES/805 KM SW OF ANCHORAGE ALASKA | | | |
| DEPTH | - | 28 MILES/45 KM | | | |

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THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-170-PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-0RZ022-002-021-001-WAZ503-506>511-001-514>517-021-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-242005-/T.CON.PAAQ.TS.W.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA 1105 AM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

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| COLD BAY-AK | 1108 | AKDT | MAR | 24 | TOFINO-BC | 1356 | PDT | MAR | 24 |
|--------------|------|------|-----|----|------------------|------|-------|-----|----|
| SEWARD-AK | 1111 | AKDT | MAR | 24 | NEAH BAY-WA | 1408 | PDT | MAR | 24 |
| YAKUTAT-AK | 1120 | AKDT | MAR | 24 | CHARLESTON-OR | 1416 | PDT 1 | MAR | 24 |
| SITKA-AK | 1121 | AKDT | MAR | 24 | SEASIDE-OR | 1421 | PDT 1 | MAR | 24 |
| VALDEZ-AK | 1130 | AKDT | MAR | 24 | WESTPORT-WA | 1422 | PDT 1 | MAR | 24 |
| LANGARA-BC | 1230 | PDT | MAR | 24 | CRESCENT CITY-CA | 1425 | PDT 1 | MAR | 24 |
| CORDOVA-AK | 1140 | AKDT | MAR | 24 | SAN FRANCISCO-CA | 1517 | PDT 1 | MAR | 24 |
| HOMER-AK | 1204 | AKDT | MAR | 24 | SANTA BARBARA-CA | 1532 | PDT 1 | MAR | 24 |
| JUNEAU-AK | 1230 | AKDT | MAR | 24 | LA JOLLA-CA | 1559 | PDT 1 | MAR | 24 |
| KETCHIKAN-AK | 1228 | AKDT | MAR | 24 | | | | | |

FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PKZ170-171-172-175-176-AKZ185-187-191-242005-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-0000000000000/ COASTAL AREAS BETWEEN AND INCLUDING DUTCH HARBOR ALASKA TO

ATTU ALASKA 1105 AM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

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ADAK-AK 1110 AKDT MAR 24 SHEMYA-AK 1153 AKDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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WCATWC Message #6

WEPA41 PAAQ 241935 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 6 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 1135 AM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES. - PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
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THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LOCATION LAT LON TIME AMPL

KODIAK AK 57.8 N 152.4 W 1846 3.90 FT/1.20 M SEWARD AK 60.1 N 149.4 W 1911 2.40 FT/0.74 M FORECAST MODELS PROJECT THAT 3.2-9.6 FOOT/1-3 METER WAVES COULD DEVELOP ALONG THE WEST COASTS OF CANADA - WASHINGTON - OREGON AND CALIFORNIA. A TSUNAMI BETWEEN 1.0-2.6 FEET/0.3-0.8 METERS HAVE BEEN REPORTED BETWEEN SEWARD AND KETCHIKAN AK. AND BETWEEN DUTCH HARBOR AND AMCHITKA.THESE AREAS HAVE REPORTED DAMAGE TO DOCKS AND BOATS LOCATED IN HARBORS.

PRELIMINARY EARTHQUAKE PARAMETERS MAGNITUDE - 9.0 TIME - 0900 AKDT MAR 24 2010 1000 PDT MAR 24 2010 1700 UTC MAR 24 2010 105 MILES/169 KM SE OF CHIGNIK ALASKA 500 MILES/805 KM SW OF ANCHORAGE ALASKA - 28 MILES/45 KM

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

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PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-170-PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-242035-/T.CON.PAAQ.TS.W.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA 1135 AM AKDT WED MAR 24 2010

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1108 AKDT MAR 24 COLD BAY-AK TOFINO-BC 1356 PDT MAR 24 SEWARD-AK 1111 AKDT MAR 24 NEAH BAY-WA 1408 PDT MAR 24 1120 AKDT MAR 24 CHARLESTON-OR PDT MAR 24 YAKUTAT-AK 1416 SITKA-AK 1121 AKDT MAR 24 SEASIDE-OR 1421 PDT MAR 24 VALDEZ-AK 1130 AKDT MAR 24 WESTPORT-WA 1422 PDT MAR 24 PDT MAR 24 CRESCENT CITY-CA 1425 LANGARA-BC 1230 PDT MAR 24 1140 AKDT MAR 24 SAN FRANCISCO-CA 1517 PDT MAR 24 CORDOVA-AK 1204 AKDT MAR 24 SANTA BARBARA-CA 1532 PDT MAR 24 HOMER-AK JUNEAU-AK 1230 AKDT MAR 24 LA JOLLA-CA 1559 PDT MAR 24 KETCHIKAN-AK 1228 AKDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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DEPTH

PKZ170-171-172-175-176-AKZ185-187-191-242035-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING DUTCH HARBOR ALASKA TO ATTU ALASKA 1135 AM AKDT WED MAR 24 2010

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SHEMYA-AK 1153 AKDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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WCATWC Message #7

WEPA41 PAAQ 242005 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 7 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 1205 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA...

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

RECOMMENDED ACTIONS

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- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

| A TSUNAMI HAS LOCATION | LAT I | LON TIME | | |
|---------------------------|----------------|----------------|--------------------|--------------------|
| SEWARD AK | | A W 1011 | 2.40 FT/0.74 M | |
| | 59.5 N 139 | | | |
| SITKA AK | | 5.3 W 1920 | | |
| LANGARA BC | | 3.1 W 1930 | | |
| | | 5.7 W 1940 | 0.90 FT/0.26 M | |
| ATTU AK | 52.9 N 173 | 3.2 W 2000 | 1.22 FT/0.38 M | |
| FORECAST MODE | LS PROJECT THA | AT 3.2-9.6 FO | OT/1-3 METER WAVES | COULD DEVELOP |
| ALONG THE WES | T COASTS OF CA | ANADA - WASHI | NGTON - OREGON AND | |
| CALIFORNIA. | A 2.4-FOOT/0.7 | 7-METER TSUNA | MI WAS REPORTED AT | SEWARD AK WHERE |
| BOATS WERE RE | PORTED TORN FI | ROM THEIR MOOD | RINGS. THE SOUTHE | RN HALF OF SEWARDS |
| DEEP-DRAFT WH | ARF IS REPORTE | ED DAMAGED AN | D NO SHIPS ARE ALL | OWED TO TIE-UP |
| ALONGSIDE UNT | IL FURTHER NOT | FICE. A 1.8-1 | FOOT/0.6-METER TSU | NAMI WAS REPORTED |
| AT YAKUTAT WH | ERE ITS REPORT | TED THAT THRE | E PEOPLE ARE MISSI | NG AND PRESUMED |
| | | | ATTU DISPLACED NAV | |
| BOATS ARE BEI | NG CAUTIONED 1 | TO NAVIGATE I | N THE HARBOR AT TH | EIR OWN RISK. |

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGNITUDE | - | 9.0 | | | | |
|-----------|---|------|-------|-------|-----|------|
| TIME | - | 0900 | AKDT | MAR | 24 | 2010 |
| | | 1000 | PDT | MAR | 24 | 2010 |
| | | 1700 | UTC | MAR | 24 | 2010 |
| LOCATION | - | 55.0 | NORTH | I 157 | 7.0 | WEST |

105 MILES/169 KM SE OF CHIGNIK ALASKA 500 MILES/805 KM SW OF ANCHORAGE ALASKA DEPTH - 28 MILES/45 KM

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-170-PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-242105-/T.CON.PAAQ.TS.W.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA 1205 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW.

1230 PDT MAR 24 SEASIDE-OR LANGARA-BC 1421 PDT MAR 24 1228 AKDT MAR 24 WESTPORT-WA KETCHIKAN-AK PDT MAR 24 1422 CRESCENT CITY-CA 1425 PDT MAR 24 JUNEAU-AK 1230 AKDT MAR 24 TOFINO-BC 1356 PDT MAR 24 SAN FRANCISCO-CA 1517 PDT MAR 24 NEAH BAY-WA 1408 PDT MAR 24 SANTA BARBARA-CA 1532 PDT MAR 24 PDT MAR 24 CHARLESTON-OR 1416 LA JOLLA-CA 1559 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PKZ170-171-172-175-176-AKZ185-187-191-242105-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-000000000000000/ COASTAL AREAS BETWEEN AND INCLUDING DUTCH HARBOR ALASKA TO ATTU ALASKA 1205 PM AKDT WED MAR 24 2010

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WCATWC Message #8

WEPA41 PAAQ 242035 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 8 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 1235 PM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LON LOCATION LAT TIME AMPL LANGARA BC 54.2 N 133.1 W 1930 1.90 FT/0.58 M 60.5 N 145.7 W 0.90 FT/0.26 M 1940 CORDOVA AK 52.9 N 173.2 W ATTU AK 2000 1.22 FT/0.38 M N. VANCOUVER IS 50.8 N 128.5 W 2016 2.37 FT/0.74 M FORECAST MODELS PROJECT THAT 3.2-9.6 FOOT/1-3 METER WAVES COULD DEVELOP ALONG THE WEST COASTS OF WASHINGTON - OREGON AND CALIFORNIA. A 2.4-FOOT/0.7-METER TSUNAMI WAS REPORTED AT THE N. TIP OF VANCOUVER IS. THE BOARDWALKS AT PORT MCNEILL AND PORT HARDY HAVE BEEN REPORTED AS BEING SEVERLY DAMAGED SLOWING FOOT-TRAFFIC IN THOSE THREE ORCAS WERE WASHED ASHORE IN TELEGRAPH COVE AND ONE COMMUNITIES. PERSON DROWNED AT SAYWARD. PRELIMINARY EARTHOUAKE PARAMETERS

| T ICT T TUTINI IC. | | |
|--------------------|---|---|
| MAGNITUDE | - | 9.0 |
| TIME | - | 0900 AKDT MAR 24 2010 |
| | | 1000 PDT MAR 24 2010 |
| | | 1700 UTC MAR 24 2010 |
| LOCATION | - | 55.0 NORTH 157.0 WEST |
| | | 105 MILES/169 KM SE OF CHIGNIK ALASKA |
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| DEPTH | - | 28 MILES/45 KM |

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| TOFINO-BC | 1356 | PDT MAR | 24 | CRESCENT CITY-CA | 1425 | PDT MAR 24 |
|------------------|--------|----------|------|------------------|------|------------|
| NEAH BAY-WA | 1408 | PDT MAR | 24 | SAN FRANCISCO-CA | 1517 | PDT MAR 24 |
| CHARLESTON-OR | 1416 | PDT MAR | 24 | SANTA BARBARA-CA | 1532 | PDT MAR 24 |
| SEASIDE-OR | 1421 | PDT MAR | 24 | LA JOLLA-CA | 1559 | PDT MAR 24 |
| WESTPORT-WA | 1422 | PDT MAR | 24 | | | |
| FOR ARRIVAL TIME | S AT A | DDITIONA | L LO | CATIONS SEE | | |
| WCATWC.ARH.NOAA. | GOV | | | | | |

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PKZ170-171-172-175-176-AKZ185-187-191-242135-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-000000000000000/ COASTAL AREAS BETWEEN AND INCLUDING DUTCH HARBOR ALASKA TO ATTU ALASKA 1235 PM AKDT WED MAR 24 2010

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FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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WCATWC Message #9

WEPA41 PAAQ 242105 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 9 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 105 PM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA AND ALASKA FROM THE CALIFORNIA-MEXICO BORDER TO DUTCH HARBOR ALASKA...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU ALASKA...

RECOMMENDED ACTIONS A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES. - PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
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A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES LOCATION TIAT LON TIME AMPT _ _ _ _ _ _ _ _ _ _ _ _ _ N. VANCOUVER IS 50.8 N 128.5 W 2016 2.37 FT/0.74 M FORECAST MODELS PROJECT THAT 3.2-9.6 FOOT/1-3 METER WAVES COULD DEVELOP ALONG THE WEST COASTS OF WASHINGTON - OREGON AND CALIFORNIA. A 0.6-FOOT/0.2-METER TSUNAMI WAS REPORTED IN NIKOLSKI CAUSING SOME FLOODING TO LOCAL HOMES. THE ELEVATION OF NIKOLSKI IS REPORTED TO BE 7.0 FT/2.2 M. A 0.6-FOOT/0.2-METER TSUNAMI IN ADAK WWAS REPORTED AS CAUSING LITTLE DAMAGE EXCEPT TO ONE FISHING VESSEL WHICH DRAGGED ITS ANCHOR UNTIL IT RAN AGROUND 3.0 MI/4.8 KM WEST OF THE TOWN.

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGNITUDE | - 9.0 |
|-----------|---|
| TIME | - 0900 AKDT MAR 24 2010 |
| | 1000 PDT MAR 24 2010 |
| | 1700 UTC MAR 24 2010 |
| LOCATION | - 55.0 NORTH 157.0 WEST |
| | 105 MILES/169 KM SE OF CHIGNIK ALASKA |
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TOFINO-BC 1356 PDT MAR 24 CRESCENT CITY-CA 1425 PDT MAR 24 NEAH BAY-WA PDT MAR 24 SAN FRANCISCO-CA 1517 PDT MAR 24 1408 PDT MAR 24 PDT MAR 24 SANTA BARBARA-CA 1532 CHARLESTON-OR 1416 SEASIDE-OR 1421 PDT MAR 24 LA JOLLA-CA 1559 PDT MAR 24 WESTPORT-WA 1422 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC, ARH, NOAA, GOV

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PKZ170-171-172-175-176-AKZ185-187-191-242205-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-0000000000000/ COASTAL AREAS BETWEEN AND INCLUDING DUTCH HARBOR ALASKA TO ATTU ALASKA 105 PM AKDT WED MAR 24 2010

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WCATWC Message #10

WEPA41 PAAQ 242135 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 10 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 135 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON AND BRITISH COLUMBIA FROM THE CALIFORNIA-MEXICO BORDER TO LANGARA ISLAND BRITISH COLUMBIA...

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- RECOMMENDED ACTIONS

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A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LOCATION LAT LON TIME AMPL

LAT LON TIME AMPL _ _ _ _ _ _____ ____ 2.37 FT/0.74 M N. VANCOUVER IS 50.8 N 128.5 W 2016 WASH/BC BORDER 48.4 N 124.6 W OR/WASH BORDER 46.2 N 123.8 W 1.60 FT/0.50 M 2102 0.99 FT/0.31 M 2109 CASCADE HEAD OR 44.6 N 124.1 W 2114 CA/OR BORDER 41.7 N 124.2 W 2125 6.24 FT/1.95 M 5.28 FT/1.65 M MUCH DAMAGE HAS BEEN REPORTED ALONG THE OREGON COAST FROM LINCOLN CITY TO NESKOWIN. PIERS HAVE BEEN DAMAGED AND 13 PEOPLE IN OREGON ARE REPORTED MISSING AND PRESUMED DEAD. WAVES HAVE ERODED THE BEACHES AROUND CASCADE HEAD DAMAGING LOCAL RESERVES. ALASKA ZONES HAVE BEEN DROPPED TO AN ADVISORY BECAUSE AMPLITUDES THROUGHOUT THE AREA MEASURE BETWEEN 0.9-3.1 FT/0.3-

1.0 M.

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGNITUDE - | 9.0 |
|-------------|---|
| TIME - | 0900 AKDT MAR 24 2010 |
| | 1000 PDT MAR 24 2010 |
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/T.CON.PAAQ.TS.W. 0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO LANGARA ISLAND BRITISH COLUMBIA 135 PM AKDT WED MAR 24 2010

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SAN FRANCISCO-CA 1517 PDT MAR 24 LA JOLLA-CA 1559 PDT MAR 24 SANTA BARBARA-CA 1532 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PKZ041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-242235-/T.CAN.PAAQ.TS.W.0011.000000T0000Z-0000000T0000Z/ /T.EXA.PAAQ.TS.Y.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING LANGARA ISLAND BRITISH COLUMBIA TO DUTCH HARBOR ALASKA 135 PM AKDT WED MAR 24 2010

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PKZ170-171-172-175-176-AKZ185-187-191-242235-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING DUTCH HARBOR ALASKA TO ATTU ALASKA 135 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM DUTCH HARBOR ALASKA TO ATTU

ALASKA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

WCATWC Message #11

WEPA41 PAAQ 242205 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 11 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 205 PM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON AND BRITISH COLUMBIA FROM THE CALIFORNIA-MEXICO BORDER TO LANGARA ISLAND BRITISH COLUMBIA...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

| A TSUNAMI HAS BEI | EN OBSERV | VED AT THE | FOLLOWING | SITES - |
|-------------------|-----------|------------|-----------|---------------|
| LOCATION | LAT | LON | TIME | AMPL |
| | | | | |
| OR/WASH BORDER | 46.2 N | 123.8 W | 2109 0. | .99 FT/0.31 M |
| CASCADE HEAD OR | 44.6 N | 124.1 W | 2114 6 | .24 FT/1.95 M |
| CA/OR BORDER | 41.7 N | 124.2 W | 2125 5 | .28 FT/1.65 M |
| | 20 1 NT | 100 M | 2147 4 | 7/ ET/1 /0 M |

PT REYES CA 38.1 N 122.9 W 2147 4.74 FT/1.48 M WAVES BETWEEN DUTCH HARBOR AND SEWARD HAVE BEEN REPORTED AS BEING 1.0-2.9 FEET/0.3-0.9 METERS. WAVES BETWEEN SEWARD AND THE N. TIP OF VANCOUVER IS. CONTINUE TO DIMINISH BUT REMAIN BETWEEN 1.0-1.9 FEET/0.3-0.6 METERS IN HEIGHT. NORTH SPIT CA REPORTS A 3.5-FOOT/1.1-METER WAVE. PT REYES REPORTS HEAVY SURF AND STRONG CURRENTS. APPROXIMATELY 50.0 FT/16.0 M OF SHORELINE HAS BEEN ERODED FROM POINT REYES BEACH SOUTH AND 35.0 FT/11.2 M FROM POINT REYES BEACH NORTH. THREE PEOPLE ARE MISSING FROM STINSON BEACH LOCATED NORTH OF SAN FRANCISCO AND ARE PRESUMED DROWNED.

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGNIIUDE | 9.0 | |
|-----------|--------------------------------------|------|
| TIME | 0900 AKDT MAR 24 2010 | |
| | 1000 PDT MAR 24 2010 | |
| | 1700 UTC MAR 24 2010 | |
| LOCATION | 55.0 NORTH 157.0 WEST | |
| | 105 MILES/169 KM SE OF CHIGNIK ALASK | (A) |
| | 500 MILES/805 KM SW OF ANCHORAGE ALA | ASKA |
| DEPTH | 28 MILES/45 KM | |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-170-PKZ310-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-242305-/T.CON.PAAQ.TS.W.0011.00000T0000Z-0000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO LANGARA ISLAND BRITISH COLUMBIA 205 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON AND BRITISH COLUMBIA FROM THE CALIFORNIA-MEXICO BORDER TO LANGARA ISLAND BRITISH COLUMBIA...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW.

SAN FRANCISCO-CA 1517 PDT MAR 24 LA JOLLA-CA 1559 PDT MAR 24 SANTA BARBARA-CA 1532 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PKZ041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-242305-/T.CON.PAAQ.TS.Y.0011.00000T0000Z-00000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA 205 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #12

WEPA41 PAAQ 242235 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 12 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 235 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...

- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA...
- RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.
- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LOCATION LAT LON TIME AMPL

PT REYES CA 38.1 N 122.9 W 2147 4.74 FT/1.48 M PT CONCEPTION CA 34.7 N 120.5 W 2212 5.12 FT/1.60 M WAVES BETWEEN DUTCH HARBOR AND SEWARD HAVE BEEN REPORTED AS BEING 1.0-2.9 FEET/0.3-0.9 METERS AND DIMINISHING. DAMAGE REPORTS CONTINUE COMING IN FOR COASTAL COMMUNITIES BETWEEN DUTCH HARBOR AND SEWARD AK. LUMBER AND OTHER DEBREE IN THE GULF OF ALASKA IS REPORTED TO BE WASHING UP ON THE ALASKAN SHORELINE. BOTH PT REYES CA AND NORTH SPIT CA REPORT SOME DAMAGE TO PIER FACES AND HEAVY EROSION OF BEACH MATERIAL. THIRTY-SIX DEATHS HAVE BEEN REPORTED IN THIS PART OF CALIFORNIA THUS FAR OF PEOPLE WHO WERE DROWNED FROM BEING TOO CLOSE TO THE WAVE AS IT CAME TO SHORE.

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGNITUDE - | - 9.0 |
|-------------|---|
| TIME - | - 0900 AKDT MAR 24 2010 |
| | 1000 PDT MAR 24 2010 |
| | 1700 UTC MAR 24 2010 |
| LOCATION - | - 55.0 NORTH 157.0 WEST |
| | 105 MILES/169 KM SE OF CHIGNIK ALASKA |
| | 500 MILES/805 KM SW OF ANCHORAGE ALASKA |
| DEPTH - | - 28 MILES/45 KM |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-242335-/T.CON.PAAQ.TS.W.0011.000000T0000Z-000000T0000Z/

COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER 235 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME. ESTIMATED TIMES OF INITIAL WAVE ARRIVAL FOR SELECTED SITES IN THE WARNING ARE PROVIDED BELOW.

LA JOLLA-CA 1559 PDT MAR 24 FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PZZ170-PKZ310-242335-/T.CAN.PAAQ.TS.W.0011.00000T0000Z-000000T0000Z/ /T.EXA.PAAQ.TS.Y.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA 235 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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PKZ041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-242335-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA 235 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF ALASKA FROM LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #13

WEPA41 PAAQ 242305 TSUWCA BULLETIN TSUNAMI MESSAGE NUMBER 13 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 305 PM AKDT WED MAR 24 2010 ... A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER.. ... A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA... RECOMMENDED ACTIONS A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES. - PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND. - PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS. THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS. A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LOCATION TAT LON TIME AMPT. _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ . ____ PT CONCEPTION CA 34.7 N 120.5 W 2212 CAL/MEX BORDER 32.7 N 117.1 W 2305 5.12 FT/1.60 M 1.28 FT/0.40 M WAVES BETWEEN DUTCH HARBOR AND SEWARD CONTINUE TO DIMINISH AND CURRENTLY VARY 0.3-1.3 FEET/0.1-0.4 METERS. 3.2-FOOT/1.0-METER WAVES HAVE BEEN REPORTED AT LA JOLLA CA AND 2.9-FOOT/0.9-METER WAVES HAVE BEEN REPORTED AT PT.SUR CA. 5-FOOT/1.6-METER WAVES WERE REPORTED TO BE UNDER-CUTTING JALAMA ROAD JUST NORTH OF PT CONCEPTION CA. HEAVY SURF WAS REPORTED IN THE SANTA BARBARA CHANNEL RESULTING IN DAMAGE TO SEVERAL BOATS. PRELIMINARY EARTHQUAKE PARAMETERS MAGNITUDE - 9.0 0900 AKDT MAR 24 2010 TIME 1000 PDT MAR 24 2010 UTC MAR 24 2010 1700 55.0 NORTH 157.0 WEST LOCATION 105 MILES/169 KM SE OF CHIGNIK ALASKA 500 MILES/805 KM SW OF ANCHORAGE ALASKA - 28 MILES/45 KM DEPTH THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED. TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL. TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-250005-/T.CON.PAAQ.TS.W.0011.00000T0000Z-0000000000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER 305 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PZZ170-PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-250005-/T.CON.PAAQ.TS.Y.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA 305 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA...

 $\ensuremath{\mathsf{PERSONS}}$ in tsunami advisory areas should move out of the water... Off the beach and out of harbors and marinas.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #14

WEPA41 PAAQ 242335 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 14 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 335 PM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM

THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LOCATION LAT LON TIME AMPL

CAL/MEX BORDER 32.7 N 117.1 W 2305 1.28 FT/0.40 M WAVES BETWEEN DUTCH HARBOR AND SEWARD HAVE DIMINISHED AND CURRENTLY VARY 0.3-0.6 FEET/0.1-0.2 METERS. 3.2-FOOT/1.0-METER WAVES HAVE BEEN REPORTED AT LA JOLLA CA AND 2.9-FOOT/0.9-METER WAVES HAVE BEEN REPORTED AT PT.SUR CA. 3-FOOT/1.0-METER WAVES HAVE BEEN REPORTED IN LONG BEACH - OCEANSIDE AND AT THE CAL/MEX BORDER. TWENTY-THREE PEOPLE ARE REPORTED DROWNED IN THIS REGION DUE TO WALKING OUT TO SEE THE TIDEPOOLS AT AN EXTREME LOW TIDE AS THE WATER DREW OUT PRIOR TO THE TSUNAMI COMING TO SHORE.

PRELIMINARY EARTHQUAKE PARAMETERS MAGNITUDE - 9.0

| INTOINTIODE | | 2.0 | |
|-------------|---|---|--|
| TIME | - | 0900 AKDT MAR 24 2010 | |
| | | 1000 PDT MAR 24 2010 | |
| | | 1700 UTC MAR 24 2010 | |
| LOCATION | - | 55.0 NORTH 157.0 WEST | |
| | | 105 MILES/169 KM SE OF CHIGNIK ALASKA | |
| | | 500 MILES/805 KM SW OF ANCHORAGE ALASKA | |
| DEPTH | - | 28 MILES/45 KM | |
| | | | |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-250035-/T.CON.PAAQ.TS.W.0011.00000T0000Z-00000000000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER 335 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PZZ170-PKZ310-041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-250035-/T.CON.PAAQ.TS.Y.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA 335 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #15

WEPA41 PAAQ 250005 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 15 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 405 PM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA...
- ... THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF ALASKA FROM LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -LOCATION LAT LON TIME AMPL CAL/MEX BORDER 32.7 N 117.1 W 2305 1.28 FT/0.40 M WAVES BETWEEN DUTCH HARBOR AND SEWARD HAVE DIMINISHED AND CURRENTLY VARY 0.3-0.6 FEET/0.1-0.2 METERS. ALL WAVES BETWEEN

SEWARD AND N. TIP OF VANCOUVER IS HAVE DIMINSHED TO LESS THAN 1.0 FOOT/0.3 METERS. WAVES SOUTH OF SAN FRANCISCO CA ARE DIMINSHING. THE COAST GUARD REPORTS THAT MANY HARBORS CONTAIN UNOCCUPIED AND UNMOORED WATERCRAFT. THEY ENCOURAGE ALL BOAT OWNERS TO CHECK ON THEIR PROPERTY ONCE LOCAL OFFICIALS HAVE DECLARED IT SAFE TO RETURN TO THE SHORELINE.

| PRELIMINARY | EARTHQUAKE PARAMETERS |
|-------------|---|
| MAGNITUDE | - 9.0 |
| TIME | – 0900 AKDT MAR 24 2010 |
| | 1000 PDT MAR 24 2010 |
| | 1700 UTC MAR 24 2010 |
| LOCATION | - 55.0 NORTH 157.0 WEST |
| | 105 MILES/169 KM SE OF CHIGNIK ALASKA |
| | 500 MILES/805 KM SW OF ANCHORAGE ALASKA |
| DEPTH | – 28 MILES/45 KM |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PKZ041-031>036-042-043-011>013-021-022-051-052-053-125>129-121-120-130-140-141-136>138-132-150-155-170-171-172-175-176-AKZ023-024-026>029-018>022-025-017-135-131-125-121-145-171-181-185-187-191-250105-/T.CAN.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA 405 PM AKDT WED MAR 24 2010

... THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF ALASKA FROM LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

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PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-110-156-153-150-130>135-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-WAZ503-506>511-001-514>517-021-250105-/T.CON.PAAQ.TS.W.0011.00000T0000Z-00000000000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER 405 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA - OREGON AND WASHINGTON FROM THE CALIFORNIA-MEXICO BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

FOR ARRIVAL TIMES AT ADDITIONAL LOCATIONS SEE WCATWC.ARH.NOAA.GOV

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PZZ170-PKZ310-250105-/T.CON.PAAQ.TS.Y.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA 405 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF BRITISH COLUMBIA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #16

WEPA41 PAAQ 250035 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 16 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 435 PM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON FROM THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...
- ... THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF BRITISH COLUMBIA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA...
- ...THIS MESSAGE IS INFORMATION ONLY FOR COASTAL AREAS OF ALASKA FROM LANGARA ISLAND BRITISH COLUMBIA TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES. - PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -WAVES CONTINUE TO DIMINISH ALONG THE WASHINGTON COAST. MANY COAST TOWNS HAVE REPORTED CURRENT WAVEHEIGHTS BETWEEN 0.6-1.6 FEET/0.2-0.5 METERS. THESE SAME TOWNS REPORT MUCH DAMAGE TO BOATS AND FIXED STRUCTURES - SUCH AS DOCKS - THAT WERE DIRECTLY IN THE TSUNAMIS PATH. WAVES GENERALLY APPEAR TO BE DIMINISHING FROM NORTH TO SOUTH ALONG THE CALIFORNIA COAST.

PRELIMINARY EARTHQUAKE PARAMETERS

| MAGNITUDE | - | 9.0 |
|-----------|---|---|
| TIME | - | 0900 AKDT MAR 24 2010 |
| | | 1000 PDT MAR 24 2010 |
| | | 1700 UTC MAR 24 2010 |
| LOCATION | - | 55.0 NORTH 157.0 WEST |
| | | 105 MILES/169 KM SE OF CHIGNIK ALASKA |
| | | 500 MILES/805 KM SW OF ANCHORAGE ALASKA |
| DEPTH | - | 28 MILES/45 KM |

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ170-PKZ310-250135-

/T.CAN.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA 435 PM AKDT WED MAR 24 2010

... THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF BRITISH COLUMBIA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO LANGARA ISLAND BRITISH COLUMBIA...

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PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-250135-/T.CON.PAAQ.TS.W.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER 435 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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PZZ110-156-153-150-130>135-WAZ503-506>511-001-514>517-021-250135-/T.CAN.PAAQ.TS.W.0011.000000T0000Z-00000000000 /T.EXA.PAAQ.TS.Y.0011.000000T0000Z-00000000000 COASTAL AREAS BETWEEN AND INCLUDING THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER 435 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON FROM THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER... ${\tt PERSONS}$ IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #17

WEPA41 PAAQ 250105 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 17 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 505 PM AKDT WED MAR 24 2010

- ...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-CALIFORNIA BORDER...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF OREGON FROM THE OREGON-CALIFORNIA BORDER TO THE OREGON-WASHINGTON BORDER...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON FROM THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...
- ...THIS MESSAGE IS INFORMATION ONLY FOR COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE DAMAGE TO THE WARNING AND/OR ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -WAVES FROM NEAH BAY WA TO THE OR/WA BORDER ARE REPORTED TO BE LESS THAN 1.0 FOOT/0.3 METERS IN HEIGHT. WAVE HEIGHTS ARE REPORTED BETWEEN SAN FRANSISCO CA AND LA JOLLA CA AS BEING 1.0-2.6 FEET/0.3-0.8 METERS. USCG IN SAN DIEGO HAVE PULLED 11 PEOPLE FROM THE LOCAL WATERS THAT WERE OVERTAKEN BY THE TSUNAMI AND DRAWN OUT TO SEA. ALL 11 WERE IDENTIFIED AS DOA AT LOCAL AREA HOSPITALS. BOATERS ARE BEING WARNED TO WATCH OUT FOR LUMBER AND OTHER DEBREE FLOATING IN OFFSHORE WATERS THROUGHOUT THE WEST COAST.

PRELIMINARY EARTHQUAKE PARAMETERS MAGNITUDE - 9.0 TIME - 0900 AKDT MAR 24 2010 1000 PDT MAR 24 2010 1700 UTC MAR 24 2010 LOCATION - 55.0 NORTH 157.0 WEST 105 MILES/169 KM SE OF CHIGNIK ALASKA 500 MILES/805 KM SW OF ANCHORAGE ALASKA DEPTH - 28 MILES/45 KM

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL

ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. WARNINGS INDICATE THAT WIDESPREAD DANGEROUS COASTAL FLOODING ACCOMPANIED BY POWERFUL CURRENTS IS POSSIBLE AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-250205-/T.CON.PAAQ.TS.W.0011.000000T0000Z-0000000000000000 COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE OREGON-CALIFORNIA BORDER 505 PM AKDT WED MAR 24 2010

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-CALIFORNIA BORDER...

PERSONS IN TSUNAMI WARNING COASTAL AREAS SHOULD MOVE INLAND TO HIGHER GROUND.

TSUNAMI WARNINGS MEAN THAT A TSUNAMI WITH SIGNIFICANT WIDESPREAD INUNDATION IS IMMINENT OR EXPECTED. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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PZZ356-310-350-255-250-210-ORZ022-002-021-001-250205-/T.CAN.PAAQ.TS.W.0011.000000T0000Z-000000T0000Z/ /T.EXA.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE OREGON-CALIFORNIA BORDER TO THE OREGON-WASHINGTON BORDER 505 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF OREGON FROM THE OREGON-CALIFORNIA BORDER TO THE OREGON-WASHINGTON BORDER...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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PZZ110-156-153-150-130>135-WAZ503-506>511-001-514>517-021-250205-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER 505 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF WASHINGTON FROM THE OREGON-WASHINGTON

BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #18

WEPA41 PAAQ 250135 TSUWCA

BULLETIN TSUNAMI MESSAGE NUMBER 18 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 535 PM AKDT WED MAR 24 2010

- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-CALIFORNIA BORDER...
- ...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF OREGON FROM THE OREGON-CALIFORNIA BORDER TO THE OREGON-WASHINGTON BORDER...
- ... THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF WASHINGTON FROM THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...
- ...THIS MESSAGE IS INFORMATION ONLY FOR COASTAL AREAS OF BRITISH COLUMBIA AND ALASKA FROM THE WASHINGTON-BRITISH COLUMBIA BORDER TO ATTU ALASKA...

RECOMMENDED ACTIONS

A TSUNAMI HAS BEEN GENERATED WHICH COULD IMPACT THE ADVISORY REGIONS LISTED IN THE HEADLINE. PERSONS IN LOW-LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL EMERGENCY OFFICIALS. EVACUATIONS ARE ONLY ORDERED BY EMERGENCY RESPONSE AGENCIES.

- PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

THIS MESSAGE IS BASED ON EARTHQUAKE DATA... OBSERVED TSUNAMI AMPLITUDES... HISTORICAL INFORMATION AND FORECAST MODELS.

A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -

WAVE HEIGHTS ARE REPORTED BETWEEN SAN FRANSISCO CA AND LA JOLLA CA AS BEING 0.3-1.3 FEET/0.1-0.4 METERS. THOUGH THESE WAVE HEIGHTS ARE DIMINISHING ONGOING DANGER CONTINUES TO EXISTS DUE TO STRONG CURRENTS. CONSULT YOUR LOCAL SAFETY OFFICIALS BEFORE RESUMING ALL PACIFIC WATER ACTIVITIES.

PRELIMINARY EARTHQUAKE PARAMETERS MAGNITUDE - 9.0 TIME - 0900 AKDT MAR 24 2010 1000 PDT MAR 24 2010 1700 UTC MAR 24 2010 LOCATION - 55.0 NORTH 157.0 WEST 105 MILES/169 KM SE OF CHIGNIK ALASKA 500 MILES/805 KM SW OF ANCHORAGE ALASKA DEPTH - 28 MILES/45 KM

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR THE

WATER IS IMMINENT OR EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS UNDER AN ADVISORY. CURRENTS MAY BE HAZARDOUS TO SWIMMERS... BOATS... AND COASTAL STRUCTURES AND MAY CONTINUE FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

THIS MESSAGE WILL BE UPDATED IN 30 MINUTES OR SOONER IF THE SITUATION WARRANTS. THE TSUNAMI MESSAGE WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

PZZ110-156-153-150-130>135-WAZ503-506>511-001-514>517-021-250235-/T.CAN.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER 535 PM AKDT WED MAR 24 2010

...THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF WASHINGTON FROM THE OREGON-WASHINGTON BORDER TO THE WASHINGTON-BRITISH COLUMBIA BORDER...

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PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-250235-/T.CAN.PAAQ.TS.W.0011.000000T0000Z-000000T0000Z/

/T.EXA.PAAQ.TS.Y.0011.00000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE OREGON-CALIFORNIA BORDER 535 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF CALIFORNIA FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-CALIFORNIA BORDER...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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PZZ356-310-350-255-250-210-ORZ022-002-021-001-250235-/T.CON.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE OREGON-CALIFORNIA BORDER TO THE OREGON-WASHINGTON BORDER 535 PM AKDT WED MAR 24 2010

...A TSUNAMI ADVISORY IS IN EFFECT WHICH INCLUDES THE COASTAL AREAS OF OREGON FROM THE OREGON-CALIFORNIA BORDER TO THE OREGON-WASHINGTON BORDER...

PERSONS IN TSUNAMI ADVISORY AREAS SHOULD MOVE OUT OF THE WATER... OFF THE BEACH AND OUT OF HARBORS AND MARINAS.

TSUNAMI ADVISORIES MEAN THAT A TSUNAMI CAPABLE OF PRODUCING STRONG CURRENTS OR WAVES DANGEROUS TO PERSONS IN OR VERY NEAR WATER IS IMMINENT OF EXPECTED. SIGNIFICANT WIDESPREAD INUNDATION IS NOT EXPECTED FOR AREAS IN AN ADVISORY. TSUNAMIS ARE A SERIES OF WAVES POTENTIALLY DANGEROUS SEVERAL HOURS AFTER INITIAL ARRIVAL TIME.

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WCATWC Message #19

WEPA41 PAAQ 250205 TSUWCA BUILLETIN TSUNAMI MESSAGE NUMBER 19 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK 605 PM AKST WED FEB 24 2010 ... THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER... EVALUATION DAMAGING TSUNAMIS ARE NO LONGER EXPECTED ALONG THE COASTS OF THE U.S. WEST COAST STATES - ALASKA AND BRITISH COLUMBIA. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATIONS MUST BE MADE BY LOCAL AUTHORITIES. TSUNAMI AMPLITUDES HAVE DROPPED BELOW DANGEROUS LEVELS AT MOST LOCATIONS ALONG THE U.S. WEST COAST - CANADA AND ALASKA. SEA LEVEL CONDITIONS STILL VARY GREATLY FROM LOCATION TO LOCATION ALONG THE COAST. DECISIONS RELATING TO REOCCUPATION OF COASTAL ZONES MUST BE MADE BY LOCAL AUTHORITIES. A TSUNAMI HAS BEEN OBSERVED AT THE FOLLOWING SITES -WAVE HEIGHTS ARE REPORTED FROM THE OR/WA BORDER AND THE CAL/MEX BORDER AS BEING 0.3-1.0 FEET/0.1-0.3 METERS. PRELIMINARY ESTIMATES OF DAMAGE ARE IN THE TENS OF MILLIONS OF DOLLARS AND ARE EXPECTED TO RISE. BEACHES HAVE BEEN ERODED HOMES LOST AND FISHING AND PLEASURE BOATS DESTROYED. FEMA HAS INITIATED A RECOVERY PROGRAM FOR THE IMPACTED REGIONS. THE FEDERAL GOVERNMENT HAS DECLARED A STATE OF EMERGENCY FOR THE ENTIRE CONTIGUOUS WEST COAST AND ALASKA. ONE FEMA EMPLOYEE NOTED THAT THIS EVENT WILL BE MORE COSTLY THAN THE HURRICANE KATRINA CLEAN-UP EFFORTS. NINETY -THREE PEOPLE ARE EITHER KNOWN TO BE DEAD OR MISSING AT THIS POINT. PAST EVENTS HAVE SHOWN THAT THIS FIGURE IS A FRACTION OF FINAL DEATH TOLL. STRONG CURRENTS MAY CONTINUE TO OCCUR ALONG PORTIONS OF THE ENTIRE NORTH AMERICAN WEST COAST AND ALASKA FOR THE NEXT 24 HOURS. LOCAL OFFICIALS WILL ADVISE RESIDENTS WHEN IT IS SAFE TO RESUME BEACH ACTIVITIES. PRELIMINARY EARTHQUAKE PARAMETERS MAGNITUDE - 9.0 - 0900 AKDT MAR 24 2010 TIME 1000 PDT MAR 24 2010 UTC MAR 24 2010 1700 - 55.0 NORTH 157.0 WEST LOCATION 105 MILES/169 KM SE OF CHIGNIK ALASKA 500 MILES/805 KM SW OF ANCHORAGE ALASKA DEPTH - 28 MILES/45 KM THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII IS CONTINUING ITS WARNING AND WATCH FOR AREAS OUTSIDE THE STATES AND PROVINCES PREVIOUSLY LISTED. THIS WILL BE THE LAST WEST COAST/ALASKA TSUNAMI WARNING CENTER MESSAGE ISSUED FOR THIS EVENT UNLESS CONDITIONS WARRANT FURTHER INFORMATION. THIS INFORMATION IS ALSO POSTED AT WCATWC.ARH.NOAA.GOV.

PZZ775-750-655-650-673-670-565-535-530-545-560-455-540-450-356-310-350-255-250-210-CAZ039>043-087-034-035-530-006-506-508-509-529-505-002-001-ORZ022-002-021-001-250305-/T.CAN.PAAQ.TS.Y.0011.000000T0000Z-000000T0000Z/ COASTAL AREAS BETWEEN AND INCLUDING THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER 605 PM AKST WED FEB 24 2010

...THE TSUNAMI ADVISORY IS CANCELED FOR THE COASTAL AREAS OF CALIFORNIA AND OREGON FROM THE CALIFORNIA-MEXICO BORDER TO THE OREGON-WASHINGTON BORDER...

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PTWC Pacific Messages

The following messages, created for the PACIFEX 10 tsunami exercise, are representative of the international Pacific products that would be issued by the Pacific Tsunami Warning Center in response to a magnitude 9.0 earthquake and tsunami originating at 55.0°N, 157.0°W.

PTWC Pacific Message #1

WEPA40 PHEB 241705 TSUPAC

TSUNAMI BULLETIN NUMBER 001 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 1705Z 24 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A TSUNAMI WARNING AND WATCH ARE IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA

A TSUNAMI WATCH IS IN EFFECT FOR

MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS.

FOR ALL OTHER AREAS COVERED BY THIS BULLETIN... IT IS FOR INFORMATION ONLY AT THIS TIME.

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700Z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |

EVALUATION

IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED. THIS WARNING IS BASED ONLY ON THE EARTHQUAKE EVALUATION.

HOWEVER...AN EARTHQUAKE OF THIS GREAT SIZE HAS THE POTENTIAL TO GENERATE A DESTRUCTIVE TSUNAMI THAT CAN STRIKE COASTLINES NEAR THE EPICENTER WITHIN MINUTES AND MORE DISTANT COASTLINES WITHIN HOURS. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS POSSIBILITY. THIS CENTER WILL MONITOR SEA LEVEL DATA FROM GAUGES NEAR THE EARTHQUAKE TO DETERMINE IF A TSUNAMI WAS GENERATED AND ESTIMATE THE SEVERITY OF THE THREAT.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES AT FORECAST POINTS WITHIN THE WARNING AND WATCH AREAS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN SUCCESSIVE WAVES CAN BE FIVE MINUTES TO ONE HOUR.

| LOCATION FO | ORECAST POINT | COORDINATES | ARRIVAL TIME |
|-------------|--------------------------------|------------------------------|--|
| | | | |
| US PI | ST KAMCHATSK ETROPAVLOVSK K | 56.1N 162.6E 53.2N 159.6E | 2004Z 24 MAR 2030Z 24 MAR 2101Z 24 MAR |
| UI | RUP IS | 46.1N 150.5E | 2141Z 24 MAR |
| SI | EVERO KURILSK | 50.8N 156.1E | 2149Z 24 MAR |

| MIDWAY IS. | MIDWAY IS. | 28.2N 177.4W | 2111Z 24 MAR |
|--------------------------|--------------------------|------------------------------|--|
| HAWAII | NAWILIWILI | 22.0N 159.4W | 2133Z 24 MAR |
| | HONOLULU | 21.3N 157.9W | 2149Z 24 MAR |
| | HILO | 19.7N 155.1W | 2152Z 24 MAR |
| JAPAN | KUSHIRO | 42.9N 144.3E | 2225Z 24 MAR |
| | HACHINOHE | 40.5N 141.5E | 2259Z 24 MAR |
| JOHNSTON IS. WAKE IS. | JOHNSTON IS. WAKE IS. | 16.7N 169.5W 19.3N 166.6E | 22392 24 MAR 2231Z 24 MAR 2301Z 24 MAR |

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT. THE TSUNAMI WARNING AND WATCH WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Pacific Message #2

WEPA40 PHEB 241805 TSUPAC

TSUNAMI BULLETIN NUMBER 002 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 1805Z 24 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700Z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |

EVALUATION

INITIAL SEA LEVEL READINGS FROM DEEP OCEAN GAUGES CONFIRM THAT A SIGNIFICANT TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

A TSUNAMI IS A SERIES OF WAVES AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND CAN VARY SIGNIFICANTLY ALONG A COAST DUE TO LOCAL EFFECTS. THE TIME FROM ONE TSUNAMI WAVE TO THE NEXT CAN BE FIVE MINUTES TO AN HOUR, AND THE THREAT CAN CONTINUE FOR MANY HOURS AS MULTIPLE WAVES ARRIVE. FOR ALL AREAS - WHEN NO MAJOR WAVES ARE OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES AT FORECAST POINTS WITHIN THE WARNING AND WATCH AREAS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN SUCCESSIVE WAVES CAN BE FIVE MINUTES TO ONE HOUR.

| LOCATION | FORECAST POINT | COORDINATES | ARRIVAL TIME |
|---|--|--|--|
| RUSSIA | MEDNNY IS UST KAMCHATSK PETROPAVLOVSK K URUP IS | 54.7N 167.4E 56.1N 162.6E 53.2N 159.6E 46.1N 150.5E | 2004Z 24 MAR 2030Z 24 MAR 2101Z 24 MAR 2141Z 24 MAR |
| MIDWAY IS. HAWAII | SEVERO KURILSK MIDWAY IS. NAWILIWILI HONOLULU | 50.8N 156.1E 28.2N 177.4W 22.0N 159.4W 21 3N 157 9W | 2149Z 24 MAR 2111Z 24 MAR 2133Z 24 MAR 2149Z 24 MAR |
| JAPAN | HILO KUSHIRO HACHINOHE | 19.7N 155.1W 42.9N 144.3E 40.5N 141.5E | 2152Z 24 MAR 2225Z 24 MAR 2259Z 24 MAR |
| JOHNSTON IS. | KATSUURA SHIMIZU OKINAWA JOHNSTON IS. | 35.1N 140.3E 32.8N 133.0E 26.2N 127.8E 16.7N 169.5W | 2312Z 24 MAR 0032Z 25 MAR 0132Z 25 MAR 2231Z 24 MAR |
| WAKE IS. MEXICO | FORECAST POINT MEDNNY IS UST KAMCHATSK PETROPAVLOVSK K URUP IS SEVERO KURILSK MIDWAY IS. NAWILIWILI HONOLULU HILO KUSHIRO HACHINOHE KATSUURA SHIMIZU OKINAWA JOHNSTON IS. WAKE IS. ENSENADA PUNTA ABREOJOS CABO SAN LUCAS SOCORRO MAZATLAN MANZANILLO ACAPULCO PUERTO MADERO MARCUS IS. PALMYRA IS. ENIWETOK KWAJALEIN MAJURO CHRISTMAS IS. TARAWA IS. KANTON IS. MALDEN IS. FLINT IS. JARVIS IS. SAIPAN HOWLAND IS. POHNPEI IS. KOSRAE IS. GUAM CHUUK IS. NAURU PENRYN IS. PUKAPUKA IS. RAROTONGA YAP IS. NUKUNONU IS. FUNAFUL IS. HUALIEN HUALIEN CHILUNG | 19.3N 166.6E 31.8N 116.8W 26.7N 113.6W 22.8N 110.0W 18.8N 111.0W 23.2N 106.4W 19.1N 104.3W 16.9N 99.9W 14.8N 92.5W | 2301Z 24 MAR 2306Z 24 MAR 2341Z 24 MAR 0024Z 25 MAR 0036Z 25 MAR 0115Z 25 MAR 0150Z 25 MAR 0214Z 25 MAR 0345Z 25 MAR |
| MARCUS IS. PALMYRA IS. MARSHALL IS. | MARCUS IS. PALMYRA IS. ENIWETOK KWAJALEIN MAJURO | 24.3N 154.0E 6.3N 162.4W 11.4N 162.3E 8.7N 167.7E 7.1N 171.4E | 2308Z 24 MAR 2344Z 24 MAR 0015Z 25 MAR 0023Z 25 MAR 0028Z 25 MAR |
| KIRIBATI | CHRISTMAS IS. TARAWA IS. KANTON IS. MALDEN IS. | 2.0N 157.5W 1.5N 173.0E 2.8S 171.7W 3.9S 154.9W | 0019Z 25 MAR 0102Z 25 MAR 0103Z 25 MAR 0104Z 25 MAR |
| JARVIS IS. N. MARIANAS HOWLAND-BAKER POHNPEI | JARVIS IS. SAIPAN HOWLAND IS. POHNPEI IS. | 0.4S 160.1W 15.3N 145.8E 0.6N 176.6W 7.0N 158.2E | 0042Z 25 MAR 0044Z 25 MAR 0044Z 25 MAR 0045Z 25 MAR 0058Z 25 MAR |
| KOSRAE GUAM CHUUK NAURU | KOSRAE IS. GUAM CHUUK IS. NAURU | 5.5N 163.0E 13.4N 144.7E 7.4N 151.8E 0.5S 166.9E | 0058Z 25 MAR 0108Z 25 MAR 0119Z 25 MAR 0143Z 25 MAR |
| YAP | PENRIN IS. PUKAPUKA IS. RAROTONGA YAP IS. | 8.95 157.8W 10.8S 165.9W 21.2S 159.8W 9.5N 138.1E | 01502 25 MAR 0209Z 25 MAR 0330Z 25 MAR 0151Z 25 MAR |
| TOKELAU TUVALU TAIWAN | NUKUNONU IS. FUNAFUTI IS. HUALIEN HUALIEN CHILUNG TAITUNG | 9.2S 171.8W 7.9S 178.5E 24.0N 121.7E 24.0N 121.6E 25.2N 121.8E 22.7N 121.2E | 0155Z 25 MAR 0159Z 25 MAR 0209Z 25 MAR 0209Z 25 MAR 0236Z 25 MAR 0247Z 25 MAR |
| FR. POLYNESIA | HIVA OA PAPEETE RIKITEA | 10.0S 139.0W 17.5S 149.6W 23.1S 135.0W | 0220Z 25 MAR 0304Z 25 MAR 0425Z 25 MAR |
| BELAU PHILIPPINES SAMOA | MALAKAL PALANAN LEGASPI DAVAO APIA | 7.3N 134.5E 17.1N 122.6E 13.2N 123.8E 6.8N 125.7E 13.8S 171.8W | 0226Z 25 MAR 0230Z 25 MAR 0310Z 25 MAR 0324Z 25 MAR 0234Z 25 MAR |
| AMERICAN SAMOA | PAGO PAGO | 14.3S 170.7W | 0238Z 25 MAR |

| WALLIS-FUTUNA | WATITG TG | 13.2S 176.2W | 0239Z 25 MAR 0242Z 25 MAR 0249Z 25 MAR 0319Z 25 MAR 032Z 25 MAR 0323Z 25 MAR 0328Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0342Z 25 MAR 0404Z 25 MAR 0404Z 25 MAR 0313Z 25 MAR 0313Z 25 MAR 0322Z 25 MAR 0324Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0321Z 25 MAR 0321Z 25 MAR 0321Z 25 MAR 0321Z 25 MAR 0322Z 25 MAR 0321Z 25 MAR 0321Z 25 MAR 0322Z 25 MAR 0322Z 25 MAR 0322Z 25 MAR 0321Z 25 MAR 0321Z 25 MAR 0322Z 25 MAR 0348Z 25 MAR 0401Z 25 MAR 0401Z 25 MAR 0401Z 25 MAR 0413Z 25 MAR 0413Z 25 MAR |
|-----------------|--|--|---|
| PAPUA NEW GUINE | KAVIENC | 2 59 150 7F | 02427 25 MAR |
| FAFUA NEW GUINE | MANUS IS. | 2.55 ± 50.75 2.05 ± 47 FF | 02422 25 MAR |
| | MANUS IS. | 2.03 147.3E | 02107 25 MAR |
| | KIETA | 0.15 155.0E | 03192 25 MAR |
| | VANIMO | 2.65 141.3E | 03222 25 MAR |
| | AMUN | 6.US 154.7E | 03232 25 MAR |
| | RABAUL | 4.2S 152.3E | 03282 25 MAR |
| | WEWAK | 3.5S 143.6E | 0329Z 25 MAR |
| | MADANG | 5.2S 145.8E | 0342Z 25 MAR |
| | LAE | 6.8S 147.0E | 0404Z 25 MAR |
| | PORT MORESBY | 9.3S 146.9E | 0526Z 25 MAR |
| NIUE | NIUE IS. | 19.0S 170.0W | 0313Z 25 MAR |
| INDONESIA | WARSA | 0.6S 135.8E | 0316Z 25 MAR |
| | GEME | 4.6N 126.8E | 0322Z 25 MAR |
| | MANOKWARI | 0.8S 134.2E | 0323z 25 MAR |
| | JAYAPURA | 2.4S 140.8E | 0324Z 25 MAR |
| | BEREBERE | 2.5N 128.7E | 0329Z 25 MAR |
| | SORONG | 0.8S 131.1E | 03397 25 MAR |
| | PATANI | 0 4N 128 8E | 03527 25 MAR |
| SOLOMON IS. | GHATERE | 7 8S 159 2E | 03217 25 MAR |
| Bollonon ib. | PANGGOE | 6 99 157 2E | 03247 25 MAR |
| | KIRAKIRA | 10 /g 161 0F | 03297 25 MAR |
| | FALAMAE | 7 40 166 60 | 02207 25 MAR |
| | | 7.45 155.0E | 03407 25 MAR |
| | MUNDA | 0.45 157.2E | 03482 25 MAR |
| | AUKI HONIARA | 8.85 160.6E | 04012 25 MAR |
| | HONIARA | 9.3S 160.0E | 04012 25 MAR |
| VANUATU | ESPERITU SANTO | 15.1S 167.3E | 0335Z 25 MAR |
| | ANATOM IS. | 20.2S 169.9E | 0413Z 25 MAR |
| TONGA | NUKUALOFA | 21.0S 175.2W | 0346Z 25 MAR |
| GUATEMALA | SIPICATE | 13.9N 91.2W 18.1S 178.4E | 0355Z 25 MAR |
| FT.TT | SUVA | 18.1S 178.4E | 0407z 25 MAR |
| EL SALVADOR | ACAJUTLA PUERTO SANDINO | 13.6N 89.8W 12.2N 86.8W | 0411Z 25 MAR |
| NICARAGUA | PUERTO SANDINO | 12.2N 86.8W | 0433Z 25 MAR |
| | SAN JUAN DL SUR | 11.2N 85.9W | 0435Z 25 MAR |
| | | | |
| KERMADEC IS | RAOUL IS. | 29.2S 177.9W 10.9N 86.0W 9.4N 84.2W 8.4N 83.3W | 0434Z 25 MAR |
| COSTA RICA | CABO SAN ELENA | 10.9N 86.0W | 0435Z 25 MAR |
| | PUERTO QUEPOS CABO MATAPALO | 9.4N 84.2W | 0445Z 25 MAR |
| | CABO MATAPALO | 8.4N 83.3W | 04477 25 MAR |
| HONDURAS | AMAPALA | 13 2N 87 6W | 04387 25 MAR |
| PITCAIRN | PITCAIRN IS. | 13.2N 87.6W 25.1S 130.1W | 04517 25 MAR |
| PANAMA | PUNTA BURICA | 8 ON 82 8W | 04557 25 MAR |
| FANANA | PUNTA MALA | 7 5N 79 9W | 0455Z 25 MAR 0544Z 25 MAR |
| | PUERTO PINA | 7.JN 79.JW | OFEAT OF MAR |
| | PUERIO PINA | 7.4N 78.1W 9.0N 79.6W | 07127 25 MAR |
| EGUADOD | BALBOA HTS. | 9.UN /9.6W | 07122 25 MAR 0526Z 25 MAR 0613Z 25 MAR |
| ECUADOR | BALTRA IS. | 0.55 90.3W | 05262 25 MAR |
| | ESMERELDAS | 1.2N 79.8W | 06132 25 MAR |
| | LA LIBERTAD | 2.2S 81.2W | 0646Z 25 MAR |
| NEW CALEDONIA | NOUMEA | 22.3S 166.5E | 0537Z 25 MAR |
| NEW ZEALAND | EAST CAPE | 37.7S 178.5E | 0540Z 25 MAR |
| | GISBORNE | 38./S 1/8.0E | 0556Z 25 MAR |
| | NORTH CAPE | 34.4S 173.3E | 0607Z 25 MAR |
| | NAPIER | 39.5S 176.9E | 0636Z 25 MAR |
| | WELLINGTON | 41.3S 174.8E | 0646Z 25 MAR |
| | AUCKLAND(E) | 36.7S 175.0E | 0708z 25 MAR |
| | LA LIBERTAD NOUMEA EAST CAPE GISBORNE NORTH CAPE NAPIER WELLINGTON AUCKLAND(E) AUCKLAND(W) LYTTELTON NEW DI YMOUTH | 37.1S 174.2E | 0734z 25 MAR |
| | LYTTELTON | 43.6S 172.7E | 0751Z 25 MAR |
| | NEW PLYMOUTH | 39.1S 174.1E | 0813Z 25 MAR |
| · | NELSON | 41.3S 173.3E | 0818Z 25 MAR |
| | DUNEDIN | 45.9S 170.5E | 0827Z 25 MAR |
| | MILFORD SOUND | 44.6S 167.9E | 0838Z 25 MAR |
| | WESTPORT | 41.8S 171.6E | 0853Z 25 MAR |
| | BLUFF | 46.6S 168.3E | 0940z 25 MAR |
| COLOMBIA | AUCKLAND(W) LYTTELTON NEW PLYMOUTH NELSON DUNEDIN MILFORD SOUND WESTPORT BLUFF BAHIA SOLANO | 6.3N 77.4W | 0602z 25 MAR |
| | TIMACO | 1.8N 78.9W | 06217 25 MAR |
| | BIJENAVENTIJRA | 3.8N 77 2W | 06417 25 MAR |
| AUSTRALIA | | | |
| | CAIRNS | 16.7 <u>5</u> 145 8E | ()6 5% 25 MAR |
| | CAIRNS | 16.7S 145.8E 27.2S 153 3E | 06152 25 MAR 07107 25 MAR |
| | CAIRNS BRISBANE SYDNEY | 16.7S 145.8E 27.2S 153.3E 33 99 151 /F | 06152 25 MAR 0710z 25 MAR 07477 25 MAP |
| | CAIRNS BRISBANE SYDNEY MACKAY | 16.75 145.8E 27.25 153.3E 33.95 151.4E | 06152 25 MAR 0710Z 25 MAR 0747Z 25 MAR 08097 25 MAR |
| | CAIRNS BRISBANE SYDNEY MACKAY CLADSTONE | 16.7S 145.8E 27.2S 153.3E 33.9S 151.4E 21.1S 149.3E | 06152 25 MAR 0710Z 25 MAR 0747Z 25 MAR 0809Z 25 MAR 0815Z 25 MAR |
| | CAIRNS BRISBANE SYDNEY MACKAY GLADSTONE HOBAET | 16.75 145.8E 27.25 153.3E 33.95 151.4E 21.15 149.3E 23.85 151.4E | 06152 25 MAR 0710Z 25 MAR 0747Z 25 MAR 0809Z 25 MAR 0815Z 25 MAR 0815Z 25 MAR |
| QUILE | CAIRNS BRISBANE SYDNEY MACKAY GLADSTONE HOBART EACTER IC | 16.75 145.8E 27.25 153.3E 33.95 151.4E 21.15 149.3E 23.85 151.4E 43.35 147.6E | 06152 25 MAR 0710Z 25 MAR 0747Z 25 MAR 0809Z 25 MAR 0815Z 25 MAR 0914Z 25 MAR |
| CHILE | CAIRNS BRISBANE SYDNEY MACKAY GLADSTONE HOBART EASTER IS. | 16.75 145.8E 27.25 153.3E 33.95 151.4E 21.15 149.3E 23.85 151.4E 43.35 147.6E 27.15 109.4W | 06152 25 MAR 0710Z 25 MAR 0747Z 25 MAR 0809Z 25 MAR 0815Z 25 MAR 0914Z 25 MAR 0632Z 25 MAR |
| CHILE | CAIRNS BRISBANE SYDNEY MACKAY GLADSTONE HOBART EASTER IS. IQUIQUE | 16.75 145.8E 27.25 153.3E 33.95 151.4E 21.15 149.3E 23.85 151.4E 43.35 147.6E 27.15 109.4W 20.25 70.1W | 06152 25 MAR 0710Z 25 MAR 0747Z 25 MAR 0809Z 25 MAR 0815Z 25 MAR 0914Z 25 MAR 0632Z 25 MAR 0921Z 25 MAR |
| CHILE | CAIRNS BRISBANE SYDNEY MACKAY GLADSTONE HOBART EASTER IS. IQUIQUE ARICA | 16.75 145.8E 27.2S 153.3E 33.9S 151.4E 21.1S 149.3E 23.8S 151.4E 43.3S 147.6E 27.1S 109.4W 20.2S 70.1W 18.5S 70.3W | 06152 25 MAR 0710Z 25 MAR 0747Z 25 MAR 0809Z 25 MAR 0815Z 25 MAR 0914Z 25 MAR 0632Z 25 MAR 0921Z 25 MAR 0923Z 25 MAR |
| CHILE | CAIRNS BRISBANE SYDNEY MACKAY GLADSTONE HOBART EASTER IS. IQUIQUE ARICA ANTOFAGASTA | 16.75 145.8E 27.25 153.3E 33.95 151.4E 21.15 149.3E 23.85 151.4E 43.35 147.6E 27.15 109.4W 20.25 70.1W 18.55 70.3W 23.35 70.4W | 06152 25 MAR 07102 25 MAR 07472 25 MAR 08092 25 MAR 08152 25 MAR 0914Z 25 MAR 06322 25 MAR 0921Z 25 MAR 0923Z 25 MAR 0935Z 25 MAR |
| CHILE | BLUFF BAHIA SOLANO TUMACO BUENAVENTURA CAIRNS BRISBANE SYDNEY MACKAY GLADSTONE HOBART EASTER IS. IQUIQUE ARICA ANTOFAGASTA CALDERA | 16.75 145.8E 27.25 153.3E 33.95 151.4E 21.15 149.3E 23.85 151.4E 43.35 147.6E 27.15 109.4W 20.25 70.1W 18.55 70.3W 23.35 70.4W 27.15 70.8W | 06152 25 MAR 07102 25 MAR 07472 25 MAR 08092 25 MAR 08152 25 MAR 09142 25 MAR 06322 25 MAR 09212 25 MAR 09232 25 MAR 09232 25 MAR 09352 25 MAR 10002 25 MAR |

| | COQUIMBO | 29.9S 71.3W | 1014Z 25 MAR |
|------------|-----------------|--------------|--------------|
| | VALPARAISO | 33.0S 71.6W | 1030Z 25 MAR |
| | TALCAHUANO | 36.7S 73.1W | 1113Z 25 MAR |
| | CORRAL | 39.8S 73.5W | 1123Z 25 MAR |
| | GOLFO DE PENAS | 47.1S 74.9W | 1221Z 25 MAR |
| | PUERTO MONTT | 41.5S 73.0W | 1351Z 25 MAR |
| | PUNTA ARENAS | 53.2S 70.9W | 1425Z 25 MAR |
| | PUERTO WILLIAMS | 54.8S 68.2W | 1615Z 25 MAR |
| PERU | TALARA | 4.6S 81.5W | 0656Z 25 MAR |
| | PIMENTAL | 6.95 80.0W | 0718Z 25 MAR |
| | CHIMBOTE | 9.0S 78.8W | 0813Z 25 MAR |
| | LA PUNTA | 12.1S 77.2W | 0820Z 25 MAR |
| | SAN JUAN | 15.3S 75.2W | 0832Z 25 MAR |
| | MOLLENDO | 17.1S 72.0W | 0905z 25 MAR |
| ANTARCTICA | CAPE ADARE | 71.0S 170.0E | 1045z 25 MAR |
| | THURSTON IS. | 72.0S 100.0W | 1213Z 25 MAR |

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT. THE TSUNAMI WARNING WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

<u>PTWC Pacific Message #3</u>

WEPA40 PHEB 241905 TSUPAC

TSUNAMI BULLETIN NUMBER 003 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 1905Z 24 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|--|-------|----------------------------|-------|--|-------|
| | | | | | |
| KING COVE AK SAND POINT AK KODIAK AK | 55.3N | 162.3W 160.5W 152.5W | 1847Z | 1.65M / 5.4FT 3.12M / 10.2FT 1.20M / 3.9FT | 23MIN |

LAT - LATITUDE (N-NORTH, S-SOUTH) LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

- AMPL TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.
 - VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

A TSUNAMI IS A SERIES OF WAVES AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND CAN VARY SIGNIFICANTLY ALONG A COAST DUE TO LOCAL EFFECTS. THE TIME FROM ONE TSUNAMI WAVE TO THE NEXT CAN BE FIVE MINUTES TO AN HOUR, AND THE THREAT CAN CONTINUE FOR MANY HOURS AS MULTIPLE WAVES ARRIVE.

FOR ALL AREAS - WHEN NO MAJOR WAVES ARE OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES AT FORECAST POINTS WITHIN THE WARNING AND WATCH AREAS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN SUCCESSIVE WAVES CAN BE FIVE MINUTES TO ONE HOUR.

| LOCATION | FORECAST POINT | | ARRIVAL TIME |
|---|---|---|--|
| RUSSIA | MEDNNY IS UST KAMCHATSK PETROPAVLOVSK K URUP IS | 54.7N 167.4E 56.1N 162.6E 53.2N 159.6E 46.1N 150.5E | 2004Z 24 MAR 2030Z 24 MAR 2101Z 24 MAR 2141Z 24 MAR |
| MIDWAY IS. HAWAII | MIDWAY IS. NAWILIWILI | 28.2N 177.4W 22.0N 159.4W 21 2N 157.9W | 21112 24 MAR 2133Z 24 MAR 2149Z 24 MAR |
| JAPAN | KUSHIRO HACHINOHE KATSUURA SHIMIZU | 42.9N 144.3E 40.5N 141.5E 35.1N 140.3E | 2225Z 24 MAR 2259Z 24 MAR 2312Z 24 MAR |
| JOHNSTON IS. WAKE IS. MEXICO | OKINAWA JOHNSTON IS. WAKE IS. ENSENADA PUNTA ABREOJOS CABO SAN LUCAS SOCORRO MAZATLAN MANZANILLO ACAPULCO DUEPTO MADEPO | 22.8N 110.0W 18.8N 111.0W 23.2N 106.4W | 00242 25 MAR 0036Z 25 MAR 0115Z 25 MAR |
| | MANZANILLO ACAPULCO PUERTO MADERO MARCUS IS. PALMYRA IS. ENIWETOK KWAJALEIN MAJURO | 24.3N 154.0E 6.3N 162.4W 11.4N 162.3E 8.7N 167.7E 7.1N 171.4E | 2308Z 24 MAR 2344Z 24 MAR 0015Z 25 MAR 0023Z 25 MAR 0028Z 25 MAR |
| KIRIBATI | LARAWA IS. | 2.0N 157.5W 1.5N 173.0E 2.8S 171.7W 3.9S 154.9W 11.4S 151.8W | 0019Z 25 MAR 0102Z 25 MAR 0103Z 25 MAR 0104Z 25 MAR 0207Z 25 MAR |
| JARVIS IS. N. MARIANAS HOWLAND-BAKER POHNPEI KOSRAE | MALDEN IS. FLINT IS. JARVIS IS. SAIPAN HOWLAND IS. POHNPEI IS. KOSRAE IS. | 0.4S 160.1W 15.3N 145.8E 0.6N 176.6W 7.0N 158.2E 5.5N 163.0E | 00422 25 MAR 00442 25 MAR 00452 25 MAR 00582 25 MAR 00582 25 MAR |

| GIIAM | GIIAM | 13 4N 144 7E | 01087 25 MAR |
|-----------------|---|--|------------------------------|
| CHITIK | CHILLY IG | 7 /N 151 8F | 01107 25 MAD |
| NAUDU | NAUDU | 0 = 0 166 $0 =$ | 01427 25 MAD |
| NAURU | NAURU | 0.55 166.9E | 01432 25 MAR |
| COOK ISLANDS | PENRYN IS. | 8.9S 157.8W | 0150Z 25 MAR |
| | PUKAPUKA IS. | 10.8S 165.9W | 0209z 25 MAR |
| | RAROTONGA | 21.2S 159.8W | 0330z 25 MAR |
| YAP | YAP IS. | 9.5N 138.1E | 0151z 25 MAR |
| TOKELAII | NUKUNONU TS | 9 2S 171 8W | 01557 25 MAR |
| | FINARUT TO | 7 00 170 EF | 01E07 DE MAD |
| TUVALU | FUNAFULL IS. | 7.95 1/0.5E | 01592 25 MAR |
| TAIWAN | HUALIEN | 24.UN 121./E | 02092 25 MAR |
| | HUALIEN | 24.0N 121.6E | 0209Z 25 MAR |
| | CHILUNG | 25.2N 121.8E | 0236Z 25 MAR |
| | TAITUNG | 22.7N 121.2E | 0247z 25 MAR |
| FR. POLYNESIA | HIVA OA | 10.0S 139.0W | 0220z 25 MAR |
| | DADEETE | 17 5S 149 6W | 03047 25 MAR |
| | | 22 10 125 OW | 04257 25 MAD |
| | KIKIIDA | 23.15 135.0W | 04252 25 MAR |
| BELAU | MALAKAL | 7.3N 134.5E | 02262 25 MAR |
| PHILIPPINES | PALANAN | 17.IN 122.6E | 02302 25 MAR |
| | LEGASPI | 13.2N 123.8E | 0310z 25 MAR |
| | DAVAO | 6.8N 125.7E | 0324Z 25 MAR |
| SAMOA | APIA | 13.8S 171.8W | 0234z 25 MAR |
| AMERICAN SAMOA | PAGO PAGO | 14.3S 170.7W | 02387 25 MAR |
| WALLIS-FUTUNA | WALLIS IS | 13 29 176 2W | 02397 25 MAR |
| MELLO FOIONA | KANTENC | 2 50 150 7m | 02427 25 MAD |
| FAFUA NEW GUINE | VANTENG VANTENG | 2.55 ISU./E | 02422 25 MAK |
| | MANUS IS. | 2.US 14/.5E | 02492 25 MAR |
| | GUAM CHUUK IS. NAURU PENRYN IS. PUKAPUKA IS. RAROTONGA YAP IS. NUKUNONU IS. FUNAFUTI IS. HUALIEN HUALIEN HUALIEN HUALIEN CHILUNG TAITUNG HIVA OA PAPEETE RIKITEA MALAKAL PALANAN LEGASPI DAVAO APIA PAGO PAGO WALLIS IS. KAVIENG MANUS IS. KIETA VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI | 6.1S 155.6E | 0319Z 25 MAR |
| | VANIMO | 2.6S 141.3E | 0322Z 25 MAR |
| | AMUN | 6.0S 154.7E | 0323Z 25 MAR |
| | RABAUL | 4.2S 152 3E | 0328Z 25 MAR |
| | WEWAK | 3 55 143 6F | 03297 25 MAR |
| | MADANC | 5.36 115.0E | 02427 25 MAD |
| | MADANG | 5.25 145.0E | 03422 25 MAR |
| | LAE | 6.85 147.0E | 04042 25 MAR |
| | PORT MORESBY | 9.3S 146.9E | 0526Z 25 MAR |
| NIUE | NIUE IS. | 19.0S 170.0W | 0313Z 25 MAR |
| INDONESIA | PORT MORESBY NIUE IS. WARSA | 0.6S 135.8E | 0316Z 25 MAR |
| | GEME | 4.6N 126.8E | 03227 25 MAR |
| | MANOKWARI | 0 85 134 2E | 03237 25 MAR |
| | JAYAPURA | 2 /g 1/0 8F | 03247 25 MAD |
| | DEDEDEDE | 2.45 140.8E | 03242 23 MAR |
| | BEREBERE | 2.5N 128.7E | 03292 25 MAR |
| | SORONG | 0.8S 131.1E | 0339Z 25 MAR |
| | PATANI | 0.4N 128.8E | 0352z 25 MAR |
| SOLOMON IS. | GHATERE | 7.8S 159.2E | 0321Z 25 MAR |
| | PANGGOE | 6.9S 157.2E | 0324z 25 MAR |
| | KIRAKIRA | 10 4S 161 9E | 03297 25 MAR |
| | FALAMAE | 7 /9 155 68 | 03307 25 MAP |
| | MUNDA AUKI HONIARA | 9.3S 146.9E 19.0S 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E 8.4S 157.2E 8.8S 160.6E 9.3S 160.0E 15.1S 167.3E | 03407 25 MAR |
| | MUNDA | 0.45 157.2E | 03462 25 MAR |
| | AUKI | 8.85 160.6E | 04012 25 MAR |
| | HONIARA | 9.3S 160.0E | 0401Z 25 MAR |
| VANUATU | ESPERITU SANTO | 15.1S 167.3E | 0335Z 25 MAR |
| | ANATOM IS. | 20.2S 169.9E | 0413Z 25 MAR |
| TONGA | NUKUALOFA | 21.0S 175.2W | 0346Z 25 MAR |
| GUATEMALA | SIPICATE | 13.9N 91.2W | 0355Z 25 MAR |
| FIJI | SUVA | 18.1S 178.4E | 0407Z 25 MAR |
| EL SALVADOR | ACAJUTLA | 13.6N 89.8W | 0411Z 25 MAR |
| | | | |
| NICARAGUA | PUERTO SANDINO | 12.2N 86.8W | 0433Z 25 MAR |
| | SAN JUAN DL SUR | 11.2N 85.9W | 0435Z 25 MAR |
| | CORINTO | 12.5N 87.2W | 0438z 25 MAR |
| KERMADEC IS | RAOUL IS. | 29.2S 177.9W | 0434Z 25 MAR |
| COSTA RICA | CABO SAN ELENA | 10.9N 86.0W | 0435Z 25 MAR |
| | PUERTO QUEPOS | 9.4N 84.2W | 0445z 25 MAR |
| | CABO MATAPALO | 8.4N 83.3W | |
| HONDURAS | AMAPALA | 13.2N 87.6W | 0438Z 25 MAR |
| | | | 0451Z 25 MAR 0451Z 25 MAR |
| PITCAIRN | PITCAIRN IS. | 25.1S 130.1W | |
| PANAMA | PUNTA BURICA | 8.0N 82.8W | 0455z 25 MAR |
| | PUNTA MALA | 7.5N 79.9W | 0544z 25 MAR |
| | PUERTO PINA | 7.4N 78.1W | 0554Z 25 MAR |
| | BALBOA HTS. | 9.0N 79.6W | 0712Z 25 MAR |
| ECUADOR | BALTRA IS. | 0.5S 90.3W | 0526Z 25 MAR |
| - | ESMERELDAS | 1.2N 79.8W | 0613Z 25 MAR |
| | LA LIBERTAD | 2.2S 81.2W | 0646Z 25 MAR |
| NEW CALEDONIA | NOUMEA | 22.3S 166.5E | 0537Z 25 MAR |
| | | | |
| NEW ZEALAND | EAST CAPE | 37.7S 178.5E | 0540Z 25 MAR |
| | GISBORNE | 38.7S 178.0E | |
| | NORTH CAPE | 34.4S 173.3E | 0607z 25 MAR |
| | NAPIER | 39.5S 176.9E | 0636Z 25 MAR |
| | WELLINGTON | 41.3S 174.8E | 0646Z 25 MAR |
| | AUCKLAND(E) | 36.7S 175.0E | 07087 25 MAR |
| | | 50.,5 I,J.0E | 5,000 25 MAK |
| | | | |

| | AUCKLAND(W) LYTTELTON | 37.1S 174.2E 43.6S 172.7E 39.1S 174.1E | 0734z 25 MAR 0751z 25 MAR |
|--------------|------------------------------|--|------------------------------|
| | NEW PLYMOUTH | 39.1S 174.1E | 0813Z 25 MAR |
| | NELSON | 41.3S 173.3E | 0818Z 25 MAR |
| | DUNEDIN | 45.9S 170.5E | 0827Z 25 MAR |
| | MILFORD SOUND | 44.65 167.9E | 0838Z 25 MAR |
| | | 41.8S 171.6E | |
| COLONDIA | | 46.6S 168.3E | |
| COLOMBIA | | 6.3N 77.4W | |
| | | 1.8N 78.9W | |
| | BUENAVENTURA | 3.8N 77.2W | 0641Z 25 MAR |
| AUSTRALIA | CAIRNS | 16.7S 145.8E | 0615Z 25 MAR 0710Z 25 MAR |
| | BRISBANE | 27.25 153.3E | 07102 25 MAR 07472 25 MAR |
| | SYDNEY MACKAY | 27.28 153.3E 33.9S 151.4E 21.1S 149.3E 23.8S 151.4E 43.3S 147.6E 27.1S 109.4W | 07472 25 MAR 08092 25 MAR |
| | GLADSTONE | 21.15 149.3E | 08092 25 MAR 08152 25 MAR |
| | HOBART | 43.85 151.4E | 0914Z 25 MAR |
| CHILE | EASTER IS. | 43.35 147.0E | 0632Z 25 MAR |
| CHILE | LASIER IS. | 20.2S 70.1W | 0921Z 25 MAR 0921Z 25 MAR |
| | IQUIQUE ARICA | 18.5S 70.3W | 09212 25 MAR 09232 25 MAR |
| | ANTOFAGASTA | 10.35 70.3W | 09232 25 MAR 09352 25 MAR |
| | | 27.1S 70.4W | |
| | | 27.15 70.8W 29.9S 71.3W | |
| | VALPARAISO | | |
| | TALCAHUANO | | |
| | | 39.8S 73.5W | 1123Z 25 MAR |
| | | 47.1S 74.9W | |
| | PUERTO MONTT | 41.5S 73.0W | 1351Z 25 MAR |
| | PUERIO MONII PUNTA ARENAS | 53.2S 70.9W | 1425Z 25 MAR |
| | PUERTO WILLIAMS | | 1615Z 25 MAR |
| PERU | TALARA | 4.6S 81.5W | 0656Z 25 MAR |
| FERO | PIMENTAL | | 0718Z 25 MAR |
| | CHIMBOTE | 9.0S 78.8W | 0813Z 25 MAR |
| | CHIMBOTE LA PUNTA | 12.1S 77.2W | |
| | SAN JUAN | 15.3S 75.2W | |
| | MOLLENDO | 17.1S 72.0W | |
| ANTARCTICA | CAPE ADARE | 71.0S 170.0E | |
| 111111011011 | THURSTON IS. | 72.0S 100.0W | |
| | 11010101010 101 | 12100 100.00 | |

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NNNN

PTWC Pacific Message #4

WEPA40 PHEB 242005 TSUPAC

TSUNAMI BULLETIN NUMBER 004 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 2005Z 24 MAR 2010

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... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

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AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|----------------|-------|--------|-------|----------------|-------|
| | | | | | |
| SITKA AK | 57.1N | 135.3W | 1932Z | 1.66M / 5.4FT | 21MIN |
| YAKUTAT AK | 59.5N | 139.7W | 1929z | 0.57M / 1.9FT | 24MIN |
| SEWARD AK | 60.1N | 149.4W | 1918z | 0.74M / 2.4FT | 19MIN |
| KING COVE AK | 55.1N | 162.3W | 1852Z | 1.65M / 5.4FT | 27MIN |
| SAND POINT AK | 55.3N | 160.5W | 1847z | 3.12M / 10.2FT | 23MIN |
| KODIAK AK | 57.7N | 152.5W | 1836Z | 1.20M / 3.9FT | 22MIN |

LAT - LATITUDE (N-NORTH, S-SOUTH)

LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)
AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL.
IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

A TSUNAMI IS A SERIES OF WAVES AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND CAN VARY SIGNIFICANTLY ALONG A COAST DUE TO LOCAL EFFECTS. THE TIME FROM ONE TSUNAMI WAVE TO THE NEXT CAN BE FIVE MINUTES TO AN HOUR, AND THE THREAT CAN CONTINUE FOR MANY HOURS AS MULTIPLE WAVES ARRIVE.

FOR ALL AREAS - WHEN NO MAJOR WAVES ARE OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES AT FORECAST POINTS WITHIN THE WARNING AND WATCH AREAS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN SUCCESSIVE WAVES CAN BE FIVE MINUTES TO ONE HOUR.

| LOCATION | FORECAST POINT | COORDINATES | ARRIVAL TIME |
|----------------------|--|--|--|
| RUSSIA | MEDNNY IS UST KAMCHATSK PETROPAVLOVSK K URUP IS SEVERO KURILSK | 56.1N 162.6E 53.2N 159.6E 46.1N 150.5E | 2004Z 24 MAR 2030Z 24 MAR 2101Z 24 MAR 2141Z 24 MAR 2141Z 24 MAR 2149Z 24 MAR |
| MIDWAY IS. HAWAII | MIDWAY IS. NAWILIWILI HONOLULU HILO | 28.2N 177.4W 22.0N 159.4W 21.3N 157.9W 19.7N 155.1W | 2111Z 24 MAR 2133Z 24 MAR 2149Z 24 MAR 2152Z 24 MAR |
| JAPAN | KUSHIRO HACHINOHE KATSUURA SHIMIZU OKINAWA | 42.9N 144.3E 40.5N 141.5E 35.1N 140.3E 32.8N 133.0E 26.2N 127.8E | 2225Z 24 MAR 2259Z 24 MAR 2312Z 24 MAR 0032Z 25 MAR 0132Z 25 MAR |

| TOUNCTON TO | JOHNSTON IS. | 16 7N 160 EM | |
|--|--|--|--|
| WAVE TO | WAKE TO | 10 2N 166 6E | 22312 24 MAR |
| WAKE IS. | WARE IS. | 19.3N 100.0E | 23012 24 MAR |
| MEXICO | ENSENADA | 31.8N 116.8W | 2306Z 24 MAR |
| | PUNTA ABREOJOS | 26.7N 113.6W | 2341z 24 MAR |
| | CABO SAN LUCAS | 22.8N 110.0W | 0024z 25 MAR |
| | SOCORRO | 18 8N 111 OW | 00367 25 MAR |
| | MA ZATTI ANI | 22 DM 106 AM | 011E7 2E MAD |
| | | 23.2N 106.4W | 01152 25 MAR |
| | MANZANILLO | 19.1N 104.3W | 0150Z 25 MAR |
| | ACAPULCO | 16.9N 99.9W | 0214Z 25 MAR |
| | PUERTO MADERO | 14.8N 92.5W | 0345z 25 MAR |
| MARCIIS IS | MARCIIS IS | 24 3N 154 OF | 23087 24 MAR |
| | DALWYDA TO | | |
| PALMIRA 15. | PALMIRA 15. | 0.3N 102.4W | 23442 24 MAR |
| MARSHALL IS. | ENTWETOK | 11.4N 162.3E | 00152 25 MAR |
| | KWAJALEIN | 8.7N 167.7E | 0023Z 25 MAR |
| | MAJURO | 7.1N 171.4E | 0028z 25 MAR |
| KIRIBATT | CHRISTMAS IS | 2 ON 157 5W | 00197 25 MAR |
| | TABAWA TO | 1 EN 172 OF | 01027 25 MAD |
| | IARAWA IS. | 1.3N 1/3.0E | 01022 25 MAR |
| | KANTON IS. | 2.85 1/1./W | 01032 25 MAR |
| | MALDEN IS. | 3.9S 154.9W | 0104Z 25 MAR |
| | FLINT IS. | 11.4S 151.8W | 0207Z 25 MAR |
| JARVIS IS. | JARVIS IS. | 0.4S 160.1W | 00427 25 MAR |
| N MARTANAS | SATDAN | 15 3N 145 8F | 00447 25 MAR |
| HOWIAND DAVED | | 0 6N 176 6W | 004E7 2E MAD |
| NOWLAND-BAKER | TIOMTHAIN T2. | U.UN 170.0W | 00452 25 MAR |
| FOHNFET | POHNPEI IS. | /.UN 158.2E | 00582 25 MAR |
| KOSRAE | KOSRAE IS. | 5.5N 163.0E | 0058Z 25 MAR |
| GUAM | GUAM | 13.4N 144.7E | 0108Z 25 MAR |
| CHUUK | CHUUK IS | 7.4N 151 8E | 01197 25 MAR |
| NAUDII | NAUDII | 0 59 166 95 | 01437 25 MAP |
| ACON TOTANDO | DENDVN TO | | 01E07 OF MAD |
| COOK ISLANDS | PENRIN 15. | 8.95 157.8W | 01502 25 MAR |
| | PUKAPUKA IS. | 10.8S 165.9W | 0209Z 25 MAR |
| | RAROTONGA | 21.2S 159.8W | 0330z 25 MAR |
| YAP | YAP IS. | 9.5N 138.1E | 0151z 25 MAR |
| TOKELAII | NUKUNONU TS | 9 25 171 8W | 01557 25 MAR |
| | EINIAEUET IC | 7 OC 179 EF | 01502 25 MAD |
| IUVALU | FUNAFULI IS. | 7.95 170.5E | 01592 25 MAR |
| TALWAN | HUALIEN | 24.0N 121.7E | 02092 25 MAR |
| | HUALIEN | 24.0N 121.6E | 0209Z 25 MAR |
| | CHILUNG | 25.2N 121.8E | 0236Z 25 MAR |
| | TAITUNG | 22.7N 121.2E | 0247z 25 MAR |
| FR. POLYNESIA | HIVA OA | 10.05 139.0W | 0220z 25 MAR |
| 1111 1021120211 | | 17 50 1/9 6W | 03047 25 MAP |
| | DIVITEN | 22 10 125 OW | 04257 25 MAD |
| | KIKIIEA | 23.15 135.0W | 04252 25 MAR |
| BELAU | MALAKAL | 7.3N 134.5E | 02262 25 MAR |
| PHILIPPINES | PALANAN | 17.1N 122.6E | 0230Z 25 MAR |
| | LEGASPI | 13.2N 123.8E | 0310Z 25 MAR |
| | DAVAO | 6.8N 125.7E | 0324z 25 MAR |
| SAMOA | APIA | 13.8S 171.8W | 0234z 25 MAR |
| AMERICAN SAMOA | PAGO PAGO | 14.3S 170.7W | 02387 25 MAR |
| WALLTS - FUTUNA | WALLIS IS | 13 29 176 2W | 02307 25 MAD |
| PAPUA NEW GUINE | KANTENC | | |
| FAFOA NEW GOINE | | 2 53 150 75 | 02392 23 MAR |
| | MANUC TO | 2.5S 150.7E | 0242Z 25 MAR |
| | MANUS IS. | 2.5S 150.7E 2.0S 147.5E | 0242Z 25 MAR 0242Z 25 MAR 0249Z 25 MAR |
| | MANUS IS. KIETA | 2.5S 150.7E 2.0S 147.5E 6.1S 155.6E | 0242Z 25 MAR 0249Z 25 MAR 0319Z 25 MAR |
| | MANUS IS. KIETA VANIMO | 2.5S 150.7E 2.0S 147.5E 6.1S 155.6E 2.6S 141.3E | 2231Z 24 MAR 2301Z 24 MAR 2306Z 24 MAR 2341Z 24 MAR 036Z 25 MAR 0036Z 25 MAR 015Z 25 MAR 015Z 25 MAR 0345Z 25 MAR 0345Z 25 MAR 0345Z 25 MAR 0345Z 25 MAR 0015Z 25 MAR 0015Z 25 MAR 0015Z 25 MAR 0019Z 25 MAR 0102Z 25 MAR 0102Z 25 MAR 0104Z 25 MAR 0104Z 25 MAR 0045Z 25 MAR 0045Z 25 MAR 0045Z 25 MAR 0104Z 25 MAR 0045Z 25 MAR 015Z 25 MAR 016Z < |
| | MANUS IS. KIETA VANIMO AMUN | 2.65 141.3E 6 09 154 7E | 03222 25 MAR |
| | AMUN | 2.65 141.3E 6 09 154 7E | 03222 25 MAR |
| | AMUN RABAUL | 2.65 141.3E 6 09 154 7E | 03222 25 MAR |
| | VANIMO AMUN RABAUL WEWAK | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E | 03222 25 MAR 0323Z 25 MAR 0328Z 25 MAR 0329Z 25 MAR |
| | VANIMO AMUN RABAUL WEWAK | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E | 03222 25 MAR 0323Z 25 MAR 0328Z 25 MAR 0329Z 25 MAR |
| | VANIMO AMUN RABAUL WEWAK | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E | 03222 25 MAR 0323Z 25 MAR 0328Z 25 MAR 0329Z 25 MAR |
| | VANIMO AMUN RABAUL WEWAK | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E | 03222 25 MAR 0323Z 25 MAR 0328Z 25 MAR 0329Z 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19 0S 170 0W | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19 0S 170 0W | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR |
| | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19 0S 170 0W | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19 0S 170 0W | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19.0S 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03222 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19.0S 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03222 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19.0S 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03222 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19.0S 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03222 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE | 2.65 141.3E 6.0S 154.7E 4.2S 152.3E 3.5S 143.6E 5.2S 145.8E 6.8S 147.0E 9.3S 146.9E 19.0S 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03222 25 MAR |
| NIUE | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.65 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 0404Z 25 MAR 0526Z 25 MAR 0313Z 25 MAR 0316Z 25 MAR 0322Z 25 MAR 0324Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0322Z 25 MAR 0322Z 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.65 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 0404Z 25 MAR 0526Z 25 MAR 0313Z 25 MAR 0316Z 25 MAR 0322Z 25 MAR 0324Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0322Z 25 MAR 0322Z 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.65 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 0404Z 25 MAR 0526Z 25 MAR 0313Z 25 MAR 0316Z 25 MAR 0322Z 25 MAR 0324Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0329Z 25 MAR 0322Z 25 MAR 0322Z 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.0S 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03242 25 MAR 03242 25 MAR 03242 25 MAR 03242 25 MAR 03242 25 MAR 03242 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA SOLOMON IS. | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA SOLOMON IS. VANUATU | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA SOLOMON IS. VANUATU TONGA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE MINDA | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |
| NIUE INDONESIA SOLOMON IS. VANUATU TONGA | VANIMO AMUN RABAUL WEWAK MADANG LAE PORT MORESBY NIUE IS. WARSA GEME MANOKWARI JAYAPURA BEREBERE SORONG PATANI GHATERE PANGGOE KIRAKIRA FALAMAE | 2.65 141.3E 6.05 154.7E 4.25 152.3E 3.55 143.6E 5.25 145.8E 6.85 147.0E 9.35 146.9E 19.05 170.0W 0.6S 135.8E 4.6N 126.8E 0.8S 134.2E 2.4S 140.8E 2.4S 140.8E 2.5N 128.7E 0.8S 131.1E 0.4N 128.8E 7.8S 159.2E 6.9S 157.2E 10.4S 161.9E 7.4S 155.6E | 03222 25 MAR 03232 25 MAR 03282 25 MAR 03292 25 MAR 03422 25 MAR 04042 25 MAR 05262 25 MAR 03132 25 MAR 03162 25 MAR 03222 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03212 25 MAR 03212 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03222 25 MAR 03242 25 MAR 03242 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR 03292 25 MAR |

| FIJI | SUVA | 18.1S 178.4E | 0407z 25 MAR |
|---------------|---|--|------------------------------|
| EL SALVADOR | | 18.1S 178.4E 13.6N 89.8W | 0411Z 25 MAR |
| NICARAGUA | ACAJUTLA PUERTO SANDINO SAN JUAN DL SUR | 12.2N 86.8W | 04337 25 MAR |
| | SAN JUAN DI, SUR | 11 2N 85 9W | 04357 25 MAR |
| | CORINTO | 12 5N 87 2W | 04387 25 MAR |
| KERMADEC IS | CORINTO RAOUL IS. | 12.5N 87.2W 29.2S 177.9W | 04247 25 MAD |
| | CABO SAN ELENA | 10 ON 06 OW | 04342 23 MAR |
| COSTA RICA | CABO SAN ELENA | 10.9N 86.0W 9.4N 84.2W | 04352 25 MAR 04452 25 MAR |
| | PUERTO QUEPOS CABO MATAPALO | 9.4N 84.2W | 04452 25 MAR |
| | CABO MATAPALO | 8.4N 83.3W 13.2N 87.6W | 04472 25 MAR |
| HONDURAS | AMAPALA | 13.2N 87.6W | 0438Z 25 MAR |
| PITCAIRN | PITCAIRN IS. PUNTA BURICA | 25.1S 130.1W | 0451Z 25 MAR |
| PANAMA | | 8.0N 82.8W | 0455z 25 MAR |
| | PUNTA MALA | 7.5N 79.9W | 0544z 25 MAR |
| | PUERTO PINA | 7.5N 79.9W 7.4N 78.1W | 0554Z 25 MAR |
| | BALBOA HTS. | 9.0N 79.6W 0.5S 90.3W | 0712z 25 MAR |
| ECUADOR | BALTRA IS. | 0.5S 90.3W | 0526z 25 MAR |
| | ESMERELDAS | 1.2N 79.8W | 0613z 25 MAR |
| | LA LIBERTAD | 2.25 81.2W | 06467 25 MAR |
| NEW CALEDONIA | NOUMEA | 22 3S 166 5E | 05377 25 MAR |
| NEW ZEALAND | EAST CAPE | 37 79 178 5E | 05407 25 MAR |
| | GISBORNE | 38 79 178 OF | 05567 25 MAR |
| | NORTH CAPE | 24 AC 172 2E | 06077 25 MAR |
| | NAPIER | 34.45 1/3.3E | 06267 25 MAR |
| | NAPIER | 39.35 170.9E | 06362 25 MAR |
| | WELLINGTON | 0.5S 90.3W 1.2N 79.8W 2.2S 81.2W 22.3S 166.5E 37.7S 178.5E 38.7S 178.0E 34.4S 173.3E 39.5S 176.9E 41.3S 174.8E 36.7S 175.0E 37.1S 174.2E 43.6S 172.7E 39.1S 174.1E 41.3S 173.3E 45.9S 170.5E 44.6S 167.9E 41.8S 171.6E | 06462 25 MAR |
| | AUCKLAND(E) | 36.7S 175.0E | 07082 25 MAR |
| | AUCKLAND(W) LYTTELTON | 37.1S 174.2E | 0734Z 25 MAR |
| | LYTTELTON | 43.6S 172.7E | 0751Z 25 MAR |
| | NEW PLYMOUTH | 39.1S 174.1E | 0813Z 25 MAR |
| | NELSON | 41.3S 173.3E | 0818Z 25 MAR |
| | NELSON DUNEDIN | 45.9S 170.5E | 0827Z 25 MAR |
| | MILFORD SOUND | 44.6S 167.9E | 0838z 25 MAR |
| | WESTPORT | 41.8S 171.6E | 0853Z 25 MAR |
| | | | 0940Z 25 MAR |
| COLOMBIA | BAHIA SOLANO | 46.6S 168.3E 6.3N 77.4W | 0602Z 25 MAR |
| 002012111 | TUMACO | | 06217 25 MAR |
| | BUENAVENTURA | 3 8N 77 2W | 06417 25 MAR |
| AUSTRALIA | CAIRNS | 1.8N 78.9W 3.8N 77.2W 16.7S 145.8E 27.2S 153.3E 33.9S 151.4E 21.1S 149.3E 23.8S 151.4E 43.3S 147.6E 27.1S 109.4W 20.2S 70.1W | 06157 25 MAD |
| AUSTRALIA | BRISBANE | 27 20 152 2F | 07107 25 MAR |
| | | 27.25 IJJ.JE | 07102 25 MAR |
| | SYDNEY | 33.95 ISL.4E | 07472 25 MAR |
| | MACKAY | 21.15 149.3E | 08092 25 MAR |
| | GLADSTONE | 23.85 151.4E | 08152 25 MAR |
| ~~~~~ | HOBART | 43.3S 147.6E | 09142 25 MAR |
| CHILE | EASTER IS. | 27.1S 109.4W | 06322 25 MAR |
| | IQUIQUE | 20.2S 70.1W | 0921Z 25 MAR |
| | ARICA | 18.5S 70.3W | 0923Z 25 MAR |
| | ANTOFAGASTA | 20.25 70.1W 18.55 70.3W 23.35 70.4W | 0935Z 25 MAR |
| | CALDERA | 27.1S 70.8W | 1000Z 25 MAR |
| | COQUIMBO | 29.95 71.3W | 1014z 25 MAR |
| | VALPARAISO | 33.0S 71.6W | 1030Z 25 MAR |
| | TALCAHUANO | 36.7S 73.1W | 1113z 25 MAR |
| | CORRAL | 39.8S 73.5W | 1123z 25 MAR |
| | GOLFO DE PENAS | 47.1S 74.9W | 1221Z 25 MAR |
| | PUERTO MONTT | 41.5S 73.0W | 1351Z 25 MAR |
| | PUNTA ARENAS | 53.2S 70.9W | 1425Z 25 MAR |
| | PUERTO WILLIAMS | 54.8S 68.2W | 1615Z 25 MAR |
| PERU | TALARA | 4.6S 81.5W | 0656Z 25 MAR |
| | PIMENTAL | 6.95 80.0W | 0718Z 25 MAR |
| | CHIMBOTE | 9.0S 78.8W | 07182 25 MAR 08132 25 MAR |
| | LA PUNTA | 12.1S 77.2W | 08132 25 MAR 0820Z 25 MAR |
| | | | |
| | SAN JUAN | 15.3S 75.2W | 0832Z 25 MAR |
| | MOLLENDO | 17.1S 72.0W | 0905Z 25 MAR |
| ANTARCTICA | CAPE ADARE | 71.0S 170.0E | 1045Z 25 MAR |
| | THURSTON IS. | 72.0S 100.0W | 1213Z 25 MAR |
| | | | |

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT. THE TSUNAMI WARNING WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Pacific Message #5

WEPA40 PHEB 242105 TSUPAC

TSUNAMI BULLETIN NUMBER 005 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 2105Z 24 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON... OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY INTS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|---|--|--|---|--|---|
| TOFINO BC SKAGWAY AK LANGARA POINT BC CORDOVA AK SITKA AK YAKUTAT AK SEWARD AK KING COVE AK SAND POINT AK | 59.5N 54.2N 60.6N 57.1N 59.5N 60.1N 55.1N 55.3N | 125.9W 135.3W 133.1W 145.8W 135.3W 139.7W 149.4W 162.3W 160.5W | 2052Z 2043Z 2003Z 2001Z 1932Z 1929Z 1918Z 1852Z 1847Z | 1.72M / 5.6FT 0.88M / 2.9FT 0.58M / 1.9FT 0.26M / 0.9FT 1.66M / 5.4FT 0.57M / 1.9FT 0.74M / 2.4FT 1.65M / 5.4FT 3.12M / 10.2FT | 20MIN 25MIN 22MIN 28MIN 21MIN 24MIN 19MIN 27MIN 23MIN |
| KODIAK AK | 57.7N | 152.5W | 1836Z | 1.20M / 3.9FT | 22MIN |

LATITUDE (N-NORTH, S-SOUTH)LONGITUDE (E-EAST, W-WEST) TAT

LON

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

- AMPL TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.
 - VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT)

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

A TSUNAMI IS A SERIES OF WAVES AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND CAN VARY SIGNIFICANTLY ALONG A COAST DUE TO LOCAL EFFECTS. THE TIME FROM ONE TSUNAMI WAVE TO THE NEXT CAN BE FIVE MINUTES TO AN HOUR, AND THE THREAT CAN CONTINUE FOR MANY HOURS AS MULTIPLE WAVES ARRIVE.

FOR ALL AREAS - WHEN NO MAJOR WAVES ARE OBSERVED FOR TWO HOURS

AFTER THE ESTIMATED TIME OF ARRIVAL OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT. THE TSUNAMI WARNING WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Pacific Message #6

WEPA40 PHEB 242205 TSUPAC

TSUNAMI BULLETIN NUMBER 006 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 2205Z 24 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

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AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700z 24 MAR 2010 |
|-------------|-----|-----------------------|
| COORDINATES | - 1 | 55.0 NORTH 157.0 WEST |
| DEPTH | | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | | 9.0 |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|---|---|--|--|--|--|
| KAHULUI MAUI MOKUOLOE OAHU NAWILIWILI KAUAI CRESCENT CITY CA TERN FR. FRIGATE MIDWAY ASTORIA OR NEAH BAY WA TOFINO BC SKAGWAY AK LANGARA POINT BC CORDOVA AK | 20.9N 21.4N 22.0N 41.7N 23.8N 46.2N 48.4N 49.2N 59.5N 54.2N 60.6N | 156.5W 157.8W 159.4W 124.2W 166.2W 177.4W 123.8W 124.6W 125.9W 135.3W 133.1W 145.8W | 2147Z 2138Z 2133Z 2131Z 2129Z 2111Z 2110Z 2059Z 2052Z 2043Z 2003Z 2001Z | 2.31M / 7.6FT 0.36M / 1.2FT 1.17M / 3.8FT 2.29M / 7.5FT 0.86M / 2.8FT 0.58M / 1.9FT 1.27M / 4.1FT 1.81M / 5.9FT 1.72M / 5.6FT 0.88M / 2.9FT 0.58M / 1.9FT 0.26M / 0.9FT | 23MIN 18MIN 22MIN 24MIN 23MIN 25MIN 28MIN 20MIN 20MIN 25MIN 22MIN 28MIN |
| SITKA AK YAKUTAT AK | | 135.3W 139.7W | 1932Z 1929Z | 1.66M / 5.4FT 0.57M / 1.9FT | 21MIN 24MIN |

| SEWARD AK | 60.1N 149.4W | 1918Z | 0.74M / | 2.4FT | 19MIN |
|---------------|--------------|-------|---------|--------|-------|
| KING COVE AK | 55.1N 162.3W | 1852Z | 1.65M / | 5.4FT | 27MIN |
| SAND POINT AK | 55.3N 160.5W | 1847Z | 3.12M / | 10.2FT | 23MIN |
| KODIAK AK | 57.7N 152.5W | 1836Z | 1.20M / | 3.9FT | 22MIN |

LAT - LATITUDE (N-NORTH, S-SOUTH)

LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME) AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL.

IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

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FOR ALL AREAS - WHEN NO MAJOR WAVES ARE OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT. THE TSUNAMI WARNING WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Pacific Message #7

WEPA40 PHEB 242305 TSUPAC

TSUNAMI BULLETIN NUMBER 007 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 2305Z 24 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

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ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|---|--|--|---|---|--|
| LOS ANGELES CA FT POINT SAN FRAN HANASAKI HOKKAIDO KAWAIHAE HAWAII KAUMALAPAU HILO HAWAII MONTEREY HARBOR CA SEVERO KURILSK RU HONOLULU OAHU KAHULUI MAUI MOKUOLOE OAHU NAWILIWILI KAUAI CRESCENT CITY CA TERN FR. FRIGATE MIDWAY ASTORIA OR NEAH BAY WA TOFINO BC SKAGWAY AK LANGARA POINT BC CORDOVA AK | $\begin{array}{c} 33.7N\\ 37.8N\\ 43.3N\\ 20.0N\\ 20.8N\\ 19.7N\\ 36.6N\\ 50.7N\\ 21.3N\\ 20.9N\\ 21.4N\\ 22.0N\\ 41.7N\\ 23.8N\\ 28.2N\\ 46.2N\\ 48.4N\\ 49.2N\\ 59.5N\\ 54.2N\\ 60.6N\\ \end{array}$ | 118.3W 122.5W 145.6E 155.8W 155.1W 155.1W 156.1E 157.9W 156.5W 157.8W 156.5W 157.8W 159.4W 124.2W 166.2W 177.4W 123.8W 124.6W 125.9W 135.3W 133.1W | 2247Z 2231Z 2225Z 2208Z 2156Z 2152Z 2151Z 2149Z 2149Z 2147Z 2138Z 2131Z 2131Z 2131Z 2131Z 2131Z 2132Z 2131Z 2102Z 2059Z 2059Z 2059Z 2003Z 2003Z 2001Z | 0.91M / 3.0FT 0.41M / 1.3FT 0.29M / 1.0FT 0.51M / 1.7FT 0.76M / 2.5FT 2.34M / 7.7FT 1.26M / 4.1FT 0.46M / 1.5FT 0.83M / 2.7FT 2.31M / 7.6FT 0.36M / 1.2FT 1.17M / 3.8FT 2.29M / 7.5FT 0.86M / 2.8FT 0.58M / 1.9FT 1.27M / 4.1FT 1.81M / 5.9FT 1.72M / 5.6FT 0.88M / 2.9FT 0.58M / 1.9FT 0.58M / 1.9FT 0.58M / 1.9FT 0.58M / 1.9FT 0.58M / 1.9FT 0.26M / 0.9FT | 24MIN 25MIN 31MIN 28MIN 25MIN 21MIN 29MIN 29MIN 27MIN 27MIN 23MIN 23MIN 24MIN 24MIN 23MIN 25MIN 20MIN 25MIN 25MIN 22MIN 22MIN 28MIN |
| SITKA AK | 57.IN | 135.3W | 20012 1932Z | 0.26M / 0.9FT 1.66M / 5.4FT | 28MIN 21MIN |
| YAKUTAT AK SEWARD AK KING COVE AK SAND POINT AK KODIAK AK | 59.5N 60.1N 55.1N 55.3N | 139.7W 149.4W 162.3W | 1929Z 1918Z 1852Z 1847Z 1836Z | 0.57M / 1.9FT 0.74M / 2.4FT 1.65M / 5.4FT 3.12M / 10.2FT | 24MIN 19MIN 27MIN 23MIN 22MIN |

LAT - LATITUDE (N-NORTH, S-SOUTH) LON - LONGITUDE (E-EAST, W-WEST)

TIME – TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME) AMPL – TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT. VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

A TSUNAMI IS A SERIES OF WAVES AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND CAN VARY SIGNIFICANTLY ALONG A COAST DUE TO LOCAL EFFECTS. THE TIME FROM ONE TSUNAMI WAVE TO THE NEXT CAN BE FIVE MINUTES TO AN HOUR, AND THE THREAT CAN CONTINUE FOR MANY HOURS AS MULTIPLE WAVES ARRIVE.

FOR ALL AREAS - WHEN NO MAJOR WAVES ARE OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES AT FORECAST POINTS WITHIN THE WARNING AND WATCH AREAS ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN SUCCESSIVE WAVES CAN BE FIVE MINUTES TO ONE HOUR.

| LOCATION | FORECAST POINT | COORDINATES | ARRIVAL TIME |
|--|---|--|------------------------------|
| RUSSIA | FORECAST POINT MEDNNY IS UST KAMCHATSK PETROPAVLOVSK K URUP IS SEVERO KURILSK MIDWAY IS. NAWILIWILI HONOLULU HILO KUSHIRO HACHINOHE KATSUURA SHIMIZU OKINAWA JOHNSTON IS. WAKE IS. ENSENADA PUNTA ABREOJOS CABO SAN LUCAS SOCORO MAZATLAN MANZANILLO ACAPULCO PUERTO MADERO MARCUS IS. DALMWEA IS | 54.7N 167.4E | 2004z 24 MAR |
| | UST KAMCHATSK | 56.1N 162.6E | 2030Z 24 MAR |
| | PETROPAVLOVSK K | 53.2N 159.6E | 2101Z 24 MAR |
| | URUP IS | 46.1N 150.5E | 2141Z 24 MAR |
| | SEVERO KURILSK | 50.8N 156.1E | 2149Z 24 MAR |
| MIDWAY IS. | MIDWAY IS. | 28.2N 177.4W | 2111Z 24 MAR |
| HAWAII | NAWILIWILI | 22.0N 159.4W | 2133Z 24 MAR |
| | HONOLULU | 21.3N 157.9W | 2149Z 24 MAR |
| | HILO | 19.7N 155.1W | 2152Z 24 MAR |
| JAPAN | KUSHIRO HACHINOHE | 42.9N 144.3E | 22252 24 MAR 22507 24 MAR |
| | KATSIIIRA | 35 1N 140 3E | 22392 24 MAR 23127 24 MAR |
| | SHIMIZU | 32.8N 133.0E | 0032Z 25 MAR |
| | OKINAWA | 26.2N 127.8E | 0132Z 25 MAR |
| JOHNSTON IS. | JOHNSTON IS. | 16.7N 169.5W | 2231Z 24 MAR |
| WAKE IS. | WAKE IS. | 19.3N 166.6E | 2301Z 24 MAR |
| MEXICO | ENSENADA | 31.8N 116.8W | 2306Z 24 MAR |
| | PUNTA ABREOJOS | 26.7N 113.6W | 2341Z 24 MAR |
| | CABO SAN LUCAS | 22.8N 110.0W | 0024Z 25 MAR |
| | SOCORRO | 18.8N 111.0W | 00362 25 MAR |
| | | 23.2N 100.4W | OIISZ ZS MAR OIEOZ SE MAD |
| | | 16 QN QQ QW | 01502 25 MAR |
| | PIIERTO MADERO | 14 8N 92 5W | 03457 25 MAR |
| MARCUS IS. PALMYRA IS. MARSHALL IS | MARCUS IS. | 24.3N 154.0E | 23087 24 MAR |
| PALMYRA IS. | PALMYRA IS. | 6.3N 162.4W | 2308Z 24 MAR 2344Z 24 MAR |
| MARSHALL IS. | ENIWETOK | 11.4N 162.3E | 0015Z 25 MAR |
| | KWAJALEIN | 8.7N 167.7E | 0023Z 25 MAR |
| | MAJURO | 7.1N 171.4E | 0028Z 25 MAR |
| KIRIBATI | CHRISTMAS IS. | 2.0N 157.5W | 0019Z 25 MAR |
| | TARAWA IS. | 1.5N 173.0E | 0102Z 25 MAR |
| | KANTON IS. | 2.8S 171.7W | 0103Z 25 MAR |
| | MALDEN IS. | 3.9S 154.9W | 01042 25 MAR |
| TADUTO TO | MARCUS IS. PALMYRA IS. ENIWETOK KWAJALEIN MAJURO CHRISTMAS IS. TARAWA IS. KANTON IS. MALDEN IS. FLINT IS. JARVIS IS. | 11.45 151.8W | 02072 25 MAR |
| JARVIS IS. N. MARIANAS | SAIPAN | 15 3N 145 8F | 00422 25 MAR 00427 25 MAR |
| | HOWLAND IS. | 0.6N 176.6W | 00457 25 MAR |
| POHNPEI | POHNPEI IS. KOSRAE IS. GUAM CHUUK IS. NAURU | 3.95 154.9W 11.45 151.8W 0.45 160.1W 15.3N 145.8E 0.6N 176.6W 7.0N 158.2E 5.5N 163.0E 13.4N 144.7E 7.4N 151.8E 0.5S 166.9E 8.9S 157.8W 10.8S 165.9W | 0058Z 25 MAR |
| KOSRAE | KOSRAE IS. | 5.5N 163.0E | 0058Z 25 MAR |
| GUAM | GUAM | 13.4N 144.7E | 0108z 25 MAR |
| CHUUK NAURU | CHUUK IS. | 7.4N 151.8E | 0119Z 25 MAR |
| NAURU | NAURU | 0.5S 166.9E | 0143Z 25 MAR |
| COOK ISLANDS | PENRYN IS. | 8.9S 157.8W 10.8S 165.9W | 0150Z 25 MAR |
| | PUKAPUKA IS. | 10.8S 165.9W | 02092 25 MAR |
| YAP TOKELAU TUVALU | RAROTONGA YAP IS. NUKUNONU IS. | 21.25 159.8W | 03302 25 MAR 01517 25 MAD |
| TOKELAII | NUKUNONU IS | 9 29 171 8W | 01512 25 MAR 01557 25 MAR |
| TUVALU | FUNAFUTI IS. | 7.9S 178.5E | 0159Z 25 MAR |
| TAIWAN | HUALIEN | 24.0N 121.7E | 0209Z 25 MAR |
| | HUALIEN | 24.0N 121.6E | 0209z 25 MAR |
| | CHILUNG | 25.2N 121.8E | 0236Z 25 MAR |
| | TAITUNG | 22.7N 121.2E | 0247Z 25 MAR |
| FR. POLYNESIA | HIVA OA | 10.0S 139.0W | 0220Z 25 MAR |
| | PAPEETE | 17.5S 149.6W | 0304Z 25 MAR |
| BELAU | RIKITEA MALAKAL | 23.1S 135.0W 7.3N 134.5E | 0425Z 25 MAR 0226Z 25 MAR |
| PHILIPPINES | PALANAN | 17.1N 122.6E | 0230Z 25 MAR 0230Z 25 MAR |
| FILLEFFILES | LEGASPI | 13.2N 123.8E | 0310Z 25 MAR |
| | DAVAO | 6.8N 125.7E | 0324Z 25 MAR |
| SAMOA | APIA | 13.8S 171.8W | 0234Z 25 MAR |
| AMERICAN SAMOA | PAGO PAGO | 14.3S 170.7W | 0238Z 25 MAR |
| WALLIS-FUTUNA | WALLIS IS. | 13.2S 176.2W | 0239Z 25 MAR |
| PAPUA NEW GUINE | KAVIENG | 2.5S 150.7E | 0242Z 25 MAR |
| | MANUS IS. | 2.0S 147.5E | 0249Z 25 MAR |
| | KIETA | 6.1S 155.6E | 0319Z 25 MAR |
| | VANIMO | 2.6S 141.3E | 0322Z 25 MAR |
| | AMUN RABAUL | 6.0S 154.7E 4.2S 152.3E | 0323Z 25 MAR 0328Z 25 MAR |
| | WEWAK | 4.25 152.5E 3.5S 143.6E | 03282 25 MAR 03292 25 MAR |
| | MADANG | 5.2S 145.8E | 0342Z 25 MAR |
| | LAE | 6.8S 147.0E | 0404Z 25 MAR |
| | PORT MORESBY | 9.3S 146.9E | 0526Z 25 MAR |
| NIUE | NIUE IS. | 19.0S 170.0W | 0313Z 25 MAR |
| INDONESIA | WARSA | 0.6S 135.8E | 0316Z 25 MAR |
| | | | |

| | GEME | 4.6N 126.8E | 03227 25 MAR |
|---------------|---|---|--|
| | MANOKWARI | 0.85 134 2E | 03237 25 MAR |
| | JAYAPURA | 2.4S 140.8E | 0323Z 25 MAR 0324Z 25 MAR |
| | DEDEDEDE | 2 ENT 128 75 | 03207 25 MAD |
| | SORONG | 2.5N 128.7E 0.8S 131.1E | 03397 25 MAR |
| | PATANI | 0.4N 128.8E | 03527 25 MAR |
| SOLOMON IS. | GHATERE | 7.8S 159.2E | 03217 25 MAR |
| | PANGGOE | 6.9S 157.2E | 03247 25 MAR |
| | KIRAKIRA | 10.4S 161.9E | 0329Z 25 MAR |
| | FALAMAE | 7.4S 155.6E | 03307 25 MAR |
| | MUNDA | 8.4S 157.2E | 03487 25 MAR |
| | AUKI | 0.88 131.1E 0.4N 128.8E 7.88 159.2E 6.98 157.2E 10.4S 161.9E 7.4S 155.6E 8.4S 160.6E 9.3S 160.0E 15.1S 167.3E 20.2S 169.9E 21.0S 175.2W 13.9N 91.2W 18.1S 178.4E 13.6N 89.8W 12.2N 86.8W 11.2N 85.9W 12.5N 87.2W 29.2S 177.9W 10.9N 86.0W 9.4N 84.2W 8.4N 83.3W | 0401Z 25 MAR |
| | HONIARA | 9.3S 160.0E | 0401z 25 MAR |
| VANUATU | ESPERITU SANTO | 15.1S 167.3E | 0335Z 25 MAR |
| 11101110 | ANATOM IS. | 20.2S 169.9E | 0413Z 25 MAR |
| TONGA | NUKUALOFA | 21.0S 175.2W | 0346Z 25 MAR |
| GUATEMALA | SIPICATE | 13.9N 91.2W | 0355z 25 MAR |
| FIJI | SUVA | 18.1S 178.4E | 0407z 25 MAR |
| EL SALVADOR | ACAJUTLA | 13.6N 89.8W | 0411z 25 MAR |
| NICARAGUA | PUERTO SANDINO | 12.2N 86.8W | 0433Z 25 MAR |
| | SAN JUAN DL SUR | 11.2N 85.9W | 0435z 25 MAR |
| | CORINTO | 12.5N 87.2W | 0438Z 25 MAR |
| KERMADEC IS | RAOUL IS. | 29.2S 177.9W | 0434Z 25 MAR |
| COSTA RICA | CABO SAN ELENA | 10.9N 86.0W | 0435Z 25 MAR |
| | PUERTO QUEPOS | 9.4N 84.2W | 0445Z 25 MAR |
| | CABO MATAPALO | 8.4N 83.3W | 0447z 25 MAR |
| HONDURAS | AMAPALA | 13.2N 87.6W | 04387 25 MAR |
| PITCAIRN | PITCAIRN IS. | 25.1S 130.1W | 0451z 25 MAR 0455z 25 MAR |
| PANAMA | PUNTA BURICA | 8.0N 82.8W | 0455z 25 MAR |
| | PUNTA MALA | 7.5N 79.9W | 0544Z 25 MAR |
| | PUERTO PINA | 7.4N 78.1W | 0554z 25 MAR |
| | BALBOA HTS. | 9.0N 79.6W | 0712z 25 MAR |
| ECUADOR | BALTRA IS. | 0.5S 90.3W | 0712Z 25 MAR 0526Z 25 MAR |
| | ESMERELDAS | 1.2N 79.8W | 0613Z 25 MAR |
| | LA LIBERTAD | 1.2N 79.8W 2.2S 81.2W | 0646Z 25 MAR |
| NEW CALEDONIA | NOUMEA | 22 3S 166 5E | 05377 25 MAR |
| NEW ZEALAND | EAST CAPE | 37.7S 178.5E 38.7S 178.0E 34.4S 173.3E | 0540z 25 MAR |
| | GISBORNE | 38.7S 178.0E | 0556Z 25 MAR |
| | NORTH CAPE | 34.4S 173.3E | 0607z 25 MAR |
| | NAPIER | 39.5S 176.9E | 0636Z 25 MAR 0646Z 25 MAR |
| | WELLINGTON | 41.3S 174.8E | 0646Z 25 MAR |
| | AUCKLAND(E) | 36.7S 175.0E 37.1S 174.2E | 0708z 25 MAR |
| | AUCKLAND(W) | 37.1S 174.2E | 0734z 25 MAR |
| | LYTTELTON | 43.6S 172.7E | 0751z 25 MAR |
| | NEW PLYMOUTH | 43.6S 172.7E 39.1S 174.1E | 0813Z 25 MAR |
| | NELSON | 41.3S 173.3E | 0818Z 25 MAR 0827Z 25 MAR |
| | DUNEDIN | 45.9S 170.5E | 0827Z 25 MAR |
| | MILFORD SOUND | 44.6S 167.9E | 0838Z 25 MAR |
| | WESTPORT | 41.8S 171.6E | 0853Z 25 MAR |
| | BLUFF | 46.6S 168.3E 6.3N 77.4W | 0940z 25 MAR |
| COLOMBIA | BAHIA SOLANO | 6.3N 77.4W | 0602z 25 MAR |
| | TUMACO | 1.8N 78.9W | 0621Z 25 MAR |
| | BUENAVENTURA | 1.8N 78.9W 3.8N 77.2W | 0641Z 25 MAR |
| AUSTRALIA | CAIRNS | 16.7S 145.8E | 0615Z 25 MAR |
| | BRISBANE | 27.2S 153.3E | 0710Z 25 MAR |
| | SYDNEY | 33.9S 151.4E 21.1S 149.3E | 0747z 25 MAR |
| | MACKAY | 33.9S 151.4E 21.1S 149.3E | 0809Z 25 MAR |
| | GLADSTONE | 23.8S 151.4E 43.3S 147.6E | 0815Z 25 MAR |
| | HOBART | 43.3S 147.6E | 0914Z 25 MAR |
| CHILE | EASTER IS. | 27.1S 109.4W | 0632Z 25 MAR |
| | IQUIQUE | 27.1S 109.4W 20.2S 70.1W | 0921Z 25 MAR |
| | ARICA | 18.5S 70.3W 23.3S 70.4W | 0923Z 25 MAR |
| | ANTOFAGASTA | 23.3S 70.4W | 0935Z 25 MAR |
| | CALDERA | 27.1S 70.8W 29.9S 71.3W | 1000Z 25 MAR |
| | COQUIMBO | 29.9S 71.3W | 1014Z 25 MAR |
| | VALPARAISO | 33.0S 71.6W 36.7S 73.1W | 1030Z 25 MAR |
| | TALCAHUANO | 36.7S 73.1W | 1113Z 25 MAR |
| | CORRAL | 39.8S 73.5W 47.1S 74.9W | 1123Z 25 MAR |
| | GOLFO DE PENAS | 47.1S 74.9W | 1221Z 25 MAR |
| | | 41.5S 73.0W | 1351Z 25 MAR |
| | PUERTO MONTT | | |
| | PUERTO MONTT PUNTA ARENAS | 53.2S 70.9W | 1425Z 25 MAR |
| | PUERTO WILLIAMS | 54.8S 68.2W | 1425Z 25 MAR 1615Z 25 MAR |
| PERU | PUERTO WILLIAMS TALARA | 54.8S 68.2W | 1425z 25 MAR 1615z 25 MAR |
| PERU | PUERTO WILLIAMS TALARA PIMENTAL | 54.8S 68.2W | 1425z 25 MAR 1615z 25 MAR |
| PERU | PUERTO WILLIAMS TALARA PIMENTAL CHIMBOTE | 54.8S 68.2W 4.6S 81.5W 6.9S 80.0W 9.0S 78.8W | 1425Z 25 MAR 1615Z 25 MAR 0656Z 25 MAR 0718Z 25 MAR 0813Z 25 MAR |
| PERU | PUERTO WILLIAMS TALARA PIMENTAL CHIMBOTE LA PUNTA | 54.8S 68.2W 4.6S 81.5W 6.9S 80.0W 9.0S 78.8W | 1425Z 25 MAR 1615Z 25 MAR 0656Z 25 MAR 0718Z 25 MAR 0813Z 25 MAR |
| PERU | PUERTO WILLIAMS TALARA PIMENTAL CHIMBOTE | 54.8S 68.2W | 1425Z 25 MAR 1615Z 25 MAR 0656Z 25 MAR 0718Z 25 MAR 0813Z 25 MAR |

| | MOLLENDO | 17.1S 72.0W | 0905z 25 MAR |
|------------|--------------|--------------|--------------|
| ANTARCTICA | CAPE ADARE | 71.0S 170.0E | 1045Z 25 MAR |
| | THURSTON IS. | 72.0S 100.0W | 1213Z 25 MAR |

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT. THE TSUNAMI WARNING WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Pacific Message #8

WEPA40 PHEB 250005 TSUPAC

TSUNAMI BULLETIN NUMBER 008 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 0005Z 25 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME - | 1700z 24 MAR 2010 |
|---------------|-----------------------|
| COORDINATES - | 55.0 NORTH 157.0 WEST |
| DEPTH - | 45 KM |
| LOCATION - | ALASKA PENINSULA |
| MAGNITUDE - | 9.0 |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT LON | TIME | AMPL | PER |
|---|---|---|---|---|
| GAUGE LOCATION OMAEZAKI HONSHU SAN DIEGO CA WAKE US OFUNATO HONSHU LOS ANGELES CA FT POINT SAN FRAN HANASAKI HOKKAIDO KAWAIHAE HAWAII KAUMALAPAU HILO HAWAII MONTEREY HARBOR CA SEVERO KURILSK RU HONOLULU OAHU KAHULUI MAUI MOKUOLOE OAHU | LAT LON 34.6N 138.2E 32.7N 117.2W 19.3N 166.6E 39.0N 141.8E 33.7N 118.3W 37.8N 122.5W 43.3N 145.6E 20.0N 155.8W 20.8N 157.0W 19.7N 155.1W 36.6N 121.9W 50.7N 156.1E 21.3N 157.9W 20.9N 156.5W 21.4N 157.8W | TIME 2341Z 2302Z 2301Z 2258Z 2247Z 2231Z 2225Z 2208Z 2156Z 2152Z 2151Z 2149Z 2149Z 2147Z 2138Z | AMPL 0.44M / 1.4FT 1.13M / 3.7FT 0.48M / 1.6FT 0.22M / 0.7FT 0.91M / 3.0FT 0.41M / 1.3FT 0.29M / 1.0FT 0.51M / 1.7FT 0.76M / 2.5FT 2.34M / 7.7FT 1.26M / 4.1FT 0.46M / 1.5FT 0.83M / 2.7FT 2.31M / 7.6FT 0.36M / 1.2FT | PER 26MIN 23MIN 20MIN 24MIN 25MIN 31MIN 25MIN 25MIN 21MIN 25MIN 21MIN 29MIN 19MIN 27MIN 23MIN 18MIN |
| NAWILIWILI KAUAI CRESCENT CITY CA | 22.0N 159.4W 41.7N 124.2W | 2133Z 2131Z | 1.17M / 3.8FT 2.29M / 7.5FT | 22MIN 24MIN |

| TERN FR. FRIGATE | 23.8N 166.2W | 2129Z | 0.86M / | 2.8FT | 23MIN |
|------------------|--------------|-------|---------|--------|-------|
| MIDWAY | 28.2N 177.4W | 2111Z | 0.58M / | 1.9FT | 25MIN |
| ASTORIA OR | 46.2N 123.8W | 2110Z | 1.27M / | 4.1FT | 28MIN |
| NEAH BAY WA | 48.4N 124.6W | 2059Z | 1.81M / | 5.9FT | 30MIN |
| TOFINO BC | 49.2N 125.9W | 2052Z | 1.72M / | 5.6FT | 20MIN |
| SKAGWAY AK | 59.5N 135.3W | 2043Z | 0.88M / | 2.9FT | 25MIN |
| LANGARA POINT BC | 54.2N 133.1W | 2003Z | 0.58M / | 1.9FT | 22MIN |
| CORDOVA AK | 60.6N 145.8W | 2001Z | 0.26M / | 0.9FT | 28MIN |
| SITKA AK | 57.1N 135.3W | 1932Z | 1.66M / | 5.4FT | 21MIN |
| YAKUTAT AK | 59.5N 139.7W | 1929Z | 0.57M / | 1.9FT | 24MIN |
| SEWARD AK | 60.1N 149.4W | 1918Z | 0.74M / | 2.4FT | 19MIN |
| KING COVE AK | 55.1N 162.3W | 1852Z | 1.65M / | 5.4FT | 27MIN |
| SAND POINT AK | 55.3N 160.5W | 1847Z | 3.12M / | 10.2FT | 23MIN |
| KODIAK AK | 57.7N 152.5W | 1836Z | 1.20M / | 3.9FT | 22MIN |

LAT - LATITUDE (N-NORTH, S-SOUTH)

LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT. VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

A TSUNAMI IS A SERIES OF WAVES AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND CAN VARY SIGNIFICANTLY ALONG A COAST DUE TO LOCAL EFFECTS. THE TIME FROM ONE TSUNAMI WAVE TO THE NEXT CAN BE FIVE MINUTES TO AN HOUR, AND THE THREAT CAN CONTINUE FOR MANY HOURS AS MULTIPLE WAVES ARRIVE.

FOR ALL AREAS - WHEN NO MAJOR WAVES ARE OBSERVED FOR TWO HOURS AFTER THE ESTIMATED TIME OF ARRIVAL OR DAMAGING WAVES HAVE NOT OCCURRED FOR AT LEAST TWO HOURS THEN LOCAL AUTHORITIES CAN ASSUME THE THREAT IS PASSED. DANGER TO BOATS AND COASTAL STRUCTURES CAN CONTINUE FOR SEVERAL HOURS DUE TO RAPID CURRENTS. AS LOCAL CONDITIONS CAN CAUSE A WIDE VARIATION IN TSUNAMI WAVE ACTION THE ALL CLEAR DETERMINATION MUST BE MADE BY LOCAL AUTHORITIES.

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS WARRANT. THE TSUNAMI WARNING WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE.

THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Pacific Message #9

WEPA40 PHEB 250105 TSUPAC

TSUNAMI BULLETIN NUMBER 009 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 0105Z 25 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU /

TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

THIS BULLETIN IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |
| | | |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|---|------------|--------|----------------|----------------|----------------|
| SAIPAN US SOCORRO MX MAJURO MH CABO SAN LUCAS MX | 15.2N | 145.7E | 0044Z | 0.16M / 0.5FT | 22MIN |
| SOCORRO MX | 18.7N | 110.OW | 0036Z | 0.90M / 3.0FT | 22MIN |
| MAJURO MH | 7.1N | 171.4E | 0028Z | 0.37M / 1.2FT | 22MIN |
| CABO SAN LUCAS MX | 23.9N | 109.9W | 0024z | 1.55M / 5.1FT | 22MIN |
| KWAJALEIN MH OMAEZAKI HONSHU | 8.7N | 167.7E | 0022Z | 0.28M / 0.9FT | 22MIN |
| OMAEZAKI HONSHU | 34.6N | 138.2E | 2341Z | 0.44M / 1.4FT | 26MIN |
| OMAEZAKI HONSHU SAN DIEGO CA WAKE US OFUNATO HONSHU LOS ANGELES CA FT POINT SAN FRAN HANASAKI HOKKAIDO KAWAIHAE HAWAII KAUMALAPAU HILO HAWAII MONTEREY HARBOR CA SEVEPO KUPILSK PU | 32.7N | 117.2W | 2302Z | 1.13M / 3.7FT | 23MIN |
| WAKE US | 19.3N | 166.6E | 2301Z | 0.48M / 1.6FT | 23MIN |
| OFUNATO HONSHU | 39.ON | 141.8E | 2258Z | 0.22M / 0.7FT | 20MIN |
| LOS ANGELES CA | 33.7N | 118.3W | 2247Z | 0.91M / 3.0FT | 24MIN |
| FT POINT SAN FRAN | 37.8N | 122.5W | 2231Z | 0.41M / 1.3FT | 25MIN |
| HANASAKI HOKKAIDO | 43.3N | 145.6E | 2225Z | 0.29M / 1.0FT | 31MIN |
| KAWAIHAE HAWAII | 20.0N | 155.8W | 2208Z | 0.51M / 1.7FT | 28MIN |
| KAUMALAPAU | 20.8N | 157.OW | 2156Z | 0.76M / 2.5FT | 25MIN |
| HILO HAWAII | 19.7N | 155.1W | 2152Z | 2.34M / 7.7FT | 21MIN |
| MONTEREY HARBOR CA | 36.6N | 121.9W | 2151Z | 1.26M / 4.1FT | 29MIN |
| | | | | | |
| HONOLULU OAHU KAHULUI MAUI | 21.3N | 157.9W | 2149Z | 0.83M / 2.7FT | 27MIN |
| KAHULUI MAUI | 20.9N | 156.5W | 2147Z | 2.31M / 7.6FT | 23MIN |
| MOKUOLOE OAHU NAWILIWILI KAUAI | 21.4N | 157.8W | 2138Z | 0.36M / 1.2FT | 18MIN |
| NAWILIWILI KAUAI | 22.0N | 159.4W | 2133Z | 1.17M / 3.8FT | 22MIN |
| CRESCENT CITY CA | 41.7N | 124.2W | 21312 | 2.29M / 7.5FT | 24MIN |
| TERN FR. FRIGATE | 23.8N | 166.2W | 21292 | 0.86M / 2.8FT | 23MIN |
| MIDWAY | 28.2N | 1/7.4W | 21112 | 0.58M / 1.9FT | 25MIN |
| ASTORIA OR | 46.2N | 123.8W | 21102 | 1.2/M / 4.1FT | 28MIN |
| CRESCENT CITY CA TERN FR. FRIGATE MIDWAY ASTORIA OR NEAH BAY WA TOFINO BC SKAGWAY AK | 48.4N | 124.6W | 20592 | 1.81M / 5.9FT | 30MIN |
| IUFINO BC | 49.2N | 125.9W | 20522 | 1./2M / 5.0FI | 20MIN 25MIN |
| SKAGWAY AK | 59.5N | 133.3W | 20432 | 0.88M / 2.9FI | 22MIN 22MIN |
| CODDOVA AV | 54.2N | 145 OW | 20032 | 0.36M / 1.9FI | 28MIN 28MIN |
| CURDUVA AK | 57 1N | 125.0W | 20012 10227 | 0.20M / 0.9FI | 20MIN 21MIN |
| VAKIITAT AK | 50 5M | 130.5W | 10207 | 0 57M / 1 9FT | 24MIN 24MIN |
| CEMADD AK | 60 1N | 1/9./W | 10107 | 0.3/M / 1.9F1 | 1 QMIN |
| SKAGWAY AK LANGARA POINT BC CORDOVA AK SITKA AK YAKUTAT AK SEWARD AK KING COVE AK | 55 1M | 162 3W | 18527 | 1 65M / 5 4FT | 27MTN |
| SAND POINT AK | 55 3N | 160 5W | 18477 | 3 12M / 10 2FT | 23MTN |
| YAKUTAT AK SEWARD AK KING COVE AK SAND POINT AK KODIAK AK | 57.7N | 152.5W | 18367 | 1.20M / 3 9FT | 22MTN |
| | 3 / • / IN | 102.04 | 10000 | 1.2011 / 0.911 | |

LAT - LATITUDE (N-NORTH, S-SOUTH) LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

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THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Pacific Message #10

WEPA40 PHEB 250205 TSUPAC

TSUNAMI BULLETIN NUMBER 010 PACIFIC TSUNAMI WARNING CENTER/NOAA/NWS ISSUED AT 0205Z 25 MAR 2010

THIS BULLETIN APPLIES TO AREAS WITHIN AND BORDERING THE PACIFIC OCEAN AND ADJACENT SEAS...EXCEPT ALASKA...BRITISH COLUMBIA... WASHINGTON...OREGON AND CALIFORNIA.

... A WIDESPREAD TSUNAMI WARNING IS IN EFFECT ...

A TSUNAMI WARNING IS IN EFFECT FOR

RUSSIA / MIDWAY IS. / HAWAII / JAPAN / JOHNSTON IS. / WAKE IS. / MEXICO / MARCUS IS. / PALMYRA IS. / MARSHALL IS. / KIRIBATI / JARVIS IS. / N. MARIANAS / HOWLAND-BAKER / POHNPEI / KOSRAE / GUAM / CHUUK / NAURU / COOK ISLANDS / YAP / TOKELAU / TUVALU / TAIWAN / FR. POLYNESIA / BELAU / PHILIPPINES / SAMOA / AMERICAN SAMOA / WALLIS-FUTUNA / PAPUA NEW GUINEA / NIUE / INDONESIA / SOLOMON IS. / VANUATU / TONGA / GUATEMALA / FIJI / EL SALVADOR / NICARAGUA / KERMADEC IS / COSTA RICA / HONDURAS / PITCAIRN / PANAMA / ECUADOR / NEW CALEDONIA / NEW ZEALAND / COLOMBIA / AUSTRALIA / CHILE / PERU / ANTARCTICA

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AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 1700z 24 MAR 2010 |
|-------------|---|-----------------------|
| COORDINATES | - | 55.0 NORTH 157.0 WEST |
| DEPTH | - | 45 KM |
| LOCATION | - | ALASKA PENINSULA |
| MAGNITUDE | - | 9.0 |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|---------------------|-------|--------|-------|---------------|-------|
| | | | | | |
| MANZANILLO MX | 19.1N | 104.3W | 0150Z | 1.92M / 6.3FT | 22MIN |
| NAURU | 0.5S | 166.9E | 0143Z | 0.26M / 0.9FT | 22MIN |
| KANTON KI | 2.8S | 171.7W | 0103Z | 0.22M / 0.7FT | 22MIN |
| DEKEHTIK POHNPEI FM | 7.0N | 158.2E | 0058z | 0.35M / 1.1FT | 22MIN |
| SAIPAN US | 15.2N | 145.7E | 0044Z | 0.16M / 0.5FT | 22MIN |
| SOCORRO MX | 18.7N | 110.OW | 0036Z | 0.90M / 3.0FT | 22MIN |
| MAJURO MH | 7.1N | 171.4E | 0028Z | 0.37M / 1.2FT | 22MIN |

| CABO SAN LUCAS MX KWAJALEIN MH OMAEZAKI HONSHU SAN DIEGO CA WAKE US OFUNATO HONSHU LOS ANGELES CA FT POINT SAN FRAN HANASAKI HOKKAIDO KAWAIHAE HAWAII KAUMALAPAU HILO HAWAII MONTEREY HARBOR CA SEVERO KURILSK RU HONOLULU OAHU KAHULUI MAUI MOKUOLOE OAHU NAWILIWILI KAUAI CRESCENT CITY CA TERN FR. FRIGATE MIDWAY ASTORIA OR NEAH BAY WA TOFINO BC SKAGWAY AK | 33.7N 118.3W 37.8N 122.5W 43.3N 145.6E 20.0N 155.8W 20.8N 157.0W 19.7N 155.1W 36.6N 121.9W | 0024Z 0022Z 2341Z 2302Z 2258Z 2247Z 2231Z 2225Z 2208Z 2156Z 2152Z 2151Z 2149Z 2149Z 2149Z 2149Z 2133Z 2131Z 2131Z 2131Z 2131Z 2129Z 2111Z 2059Z 2059Z 2052Z 2043Z | 1.55M / 0.28M / 0.44M / 1.13M / 0.48M / 0.22M / 0.91M / 0.91M / 0.29M / 0.51M / 0.76M / 2.34M / 1.26M / 0.46M / 0.83M / 0.36M / 1.17M / 2.29M / 0.86M / 0.58M / 1.27M / 0.88M / 1.72M / 0.88M / | 0.9FT 1.4FT 3.7FT 1.6FT 0.7FT 3.0FT 1.3FT 1.0FT 1.7FT 2.5FT 2.5FT 7.7FT 4.1FT 1.2FT 7.6FT 1.2FT 3.8FT 7.5FT 2.8FT 1.9FT 4.1FT 5.9FT | 22MIN 22MIN 26MIN 23MIN 20MIN 24MIN 24MIN 25MIN 25MIN 25MIN 25MIN 29MIN 19MIN 27MIN 23MIN 23MIN 22MIN 24MIN 23MIN 25MIN 20MIN 20MIN 20MIN 20MIN |
|--|--|---|--|--|--|
| NEAH BAY WA | 48.4N 124.6W | 2059Z | 1.81M / | 5.9FT | 30MIN |
| SKAGWAY AK LANGARA POINT BC CORDOVA AK SITKA AK YAKUTAT AK SEWARD AK KING COVE AK SAND POINT AK KODIAK AK | | 2043Z 2003Z 2001Z 1932Z 1929Z 1918Z 1852Z 1847Z 1836Z | 0.88M / 0.58M / 0.26M / 1.66M / 0.57M / 1.65M / 1.65M / 3.12M / 1.20M / | 1.9FT 0.9FT 5.4FT | 25MIN 22MIN 28MIN 21MIN 24MIN 19MIN 27MIN 23MIN 22MIN |
| KUDIAK AK | 5/./N 152.5W | 18367 | 1.2014 / | 3.911 | ZZMIIN |

 LATITUDE (N-NORTH, S-SOUTH)
 LONGITUDE (E-EAST, W-WEST) TAT

LON

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME) AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL.

IT ISNOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

SEA LEVEL READINGS CONFIRM THAT A TSUNAMI HAS BEEN GENERATED WHICH COULD CAUSE WIDESPREAD DAMAGE. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS THREAT. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL DATA TO DETERMINE THE EXTENT AND SEVERITY OF THE THREAT.

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THE WEST COAST/ALASKA TSUNAMI WARNING CENTER WILL ISSUE PRODUCTS FOR ALASKA...BRITISH COLUMBIA...WASHINGTON...OREGON...CALIFORNIA.

NNNN

PTWC Hawaii Messages

The following messages, created for the PACIFEX 10 tsunami exercise, are representative of the Hawaii products that would be issued by the Pacific Tsunami Warning Center in response to a magnitude 9.0 earthquake and tsunami originating at 55.0°N, 157.0°W.

PTWC Hawaii Message #1

WEHW40 PHEB 241705 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-241905-/0.NEW.PHEB.TS.A.0013.100324T1705Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 1 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 705 AM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WATCH

A TSUNAMI WATCH IS ISSUED FOR THE STATE OF HAWAII EFFECTIVE AT 0705 AM HST.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST LOCATION - ALASKA PENINSULA MAGNITUDE - 9.0 MOMENT

EVALUATION

BASED ON ALL AVAILABLE DATA A TSUNAMI MAY HAVE BEEN GENERATED BY THIS EARTHQUAKE THAT COULD BE DESTRUCTIVE ON COASTAL AREAS EVEN FAR FROM THE EPICENTER. AN INVESTIGATION IS UNDERWAY TO DETERMINE IF THERE IS A TSUNAMI THREAT TO HAWAII.

IF TSUNAMI WAVES IMPACT HAWAII THE ESTIMATED EARLIEST ARRIVAL OF THE FIRST TSUNAMI WAVE IS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

PTWC Hawaii Message #2

WEHW40 PHEB 241805 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-242005-/O.CAN.PHEB.TS.A.0013.000000T0000Z-000000T0000Z/ /O.NEW.PHEB.TS.W.0012.100324T1805Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 2 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 805 AM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING

A TSUNAMI WARNING IS ISSUED FOR THE STATE OF HAWAII EFFECTIVE AT 0805 AM HST.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST LOCATION - ALASKA PENINSULA - 9.0 MOMENT MAGNITUDE - 8.4 MAGNITUDE RICHTER (MS)

EVALUATION

BASED ON SEA LEVEL READINGS FROM DEEP OCEAN GAUGES NEAR THE EARTHQUAKE... A SIGNIFICANT TSUNAMI HAS BEEN GENERATED THAT COULD CAUSE DAMAGE ALONG COASTLINES OF ALL ISLANDS IN THE STATE OF HAWAII. URGENT ACTION SHOULD BE TAKEN TO PROTECT LIVES AND PROPERTY.

A TSUNAMI IS A SERIES OF LONG OCEAN WAVES. EACH INDIVIDUAL WAVE CREST CAN LAST 5 TO 15 MINUTES OR MORE AND EXTENSIVELY FLOOD COASTAL AREAS. THE DANGER CAN CONTINUE FOR MANY HOURS AFTER THE INITIAL WAVE AS SUBSEQUENT WAVES ARRIVE. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND THE FIRST WAVE MAY NOT BE THE LARGEST TSUNAMI WAVES EFFICIENTLY WRAP AROUND ISLANDS. ALL SHORES ARE AT RISK NO MATTER WHICH DIRECTION THEY FACE. THE TROUGH OF A TSUNAMI WAVE MAY TEMPORARILY EXPOSE THE SEAFLOOR BUT THE AREA WILL QUICKLY FLOOD AGAIN. EXTREMELY STRONG AND UNUSUAL NEARSHORE CURRENTS CAN ACCOMPANY A TSUNAMI. DEBRIS PICKED UP AND CARRIED BY A TSUNAMI AMPLIFIES ITS DESTRUCTIVE POWER. SIMULTANEOUS HIGH TIDES OR HIGH SURF CAN SIGNIFICANTLY INCREASE THE TSUNAMI HAZARD.

THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE IS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

<u>PTWC Hawaii Message #3</u>

WEHW40 PHEB 241905 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-242105-/O.CON.PHEB.TS.W.0012.100324T1905Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 3 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 905 AM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING SUPPLEMENT

A TSUNAMI WARNING CONTINUES IN EFFECT FOR THE STATE OF HAWAII.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST - ALASKA PENINSULA LOCATION MAGNITUDE - 9.0 MOMENT - 8.4 RICHTER (MS) MAGNITUDE

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|---|--------------------|----------------------------|-------|--|-------------------------|
| KING COVE AK SAND POINT AK KODIAK AK | 55.3N | 162.3W 160.5W 152.5W | 1847Z | 1.65M / 5.4FT 3.12M / 10.2FT 1.20M / 3.9FT | 27MIN 23MIN 22MIN |
| LAT - LATITUDE (N-NC LON - LONGITUDE (E- TIME - TIME OF THE M | EAST, W EASUREM | -WEST) ENT (Z | | | , |

AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL.

IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT. VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT). PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

A TSUNAMI HAS BEEN GENERATED THAT COULD CAUSE DAMAGE ALONG COASTLINES OF ALL ISLANDS IN THE STATE OF HAWAII. URGENT ACTION SHOULD BE TAKEN TO PROTECT LIVES AND PROPERTY.

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THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE IS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

PTWC Hawaii Message #4

WEHW40 PHEB 242005 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-242205-/O.CON.PHEB.TS.W.0012.100324T2005Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 4 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 1005 AM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING SUPPLEMENT

A TSUNAMI WARNING CONTINUES IN EFFECT FOR THE STATE OF HAWAII.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST LOCATION - ALASKA PENINSULA MAGNITUDE - 9.0 MOMENT

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|----------------|-------|--------|-------|----------------|-------|
| | | | | | |
| SITKA AK | 57.1N | 135.3W | 1932Z | 1.66M / 5.4FT | 21MIN |
| YAKUTAT AK | 59.5N | 139.7W | 1929Z | 0.57M / 1.9FT | 24MIN |
| SEWARD AK | 60.1N | 149.4W | 1918Z | 0.74M / 2.4FT | 19MIN |
| KING COVE AK | 55.1N | 162.3W | 1852Z | 1.65M / 5.4FT | 27MIN |
| SAND POINT AK | 55.3N | 160.5W | 1847Z | 3.12M / 10.2FT | 23MIN |
| KODIAK AK | 57.7N | 152.5W | 1836Z | 1.20M / 3.9FT | 22MIN |

LAT - LATITUDE (N-NORTH, S-SOUTH)

LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT. VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

A TSUNAMI HAS BEEN GENERATED THAT COULD CAUSE DAMAGE ALONG COASTLINES OF ALL ISLANDS IN THE STATE OF HAWAII. URGENT ACTION SHOULD BE TAKEN TO PROTECT LIVES AND PROPERTY.

A TSUNAMI IS A SERIES OF LONG OCEAN WAVES. EACH INDIVIDUAL WAVE CREST CAN LAST 5 TO 15 MINUTES OR MORE AND EXTENSIVELY FLOOD COASTAL AREAS. THE DANGER CAN CONTINUE FOR MANY HOURS AFTER THE INITIAL WAVE AS SUBSEQUENT WAVES ARRIVE. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND THE FIRST WAVE MAY NOT BE THE LARGEST. TSUNAMI WAVES EFFICIENTLY WRAP AROUND ISLANDS. ALL SHORES ARE AT RISK NO MATTER WHICH DIRECTION THEY FACE. THE TROUGH OF A TSUNAMI WAVE MAY TEMPORARILY EXPOSE THE SEAFLOOR BUT THE AREA WILL QUICKLY FLOOD AGAIN. EXTREMELY STRONG AND UNUSUAL NEARSHORE CURRENTS CAN ACCOMPANY A TSUNAMI. DEBRIS PICKED UP AND CARRIED BY A TSUNAMI AMPLIFIES ITS DESTRUCTIVE POWER. SIMULTANEOUS HIGH TIDES OR HIGH SURF CAN SIGNIFICANTLY INCREASE THE TSUNAMI HAZARD.

THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE IS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

PTWC Hawaii Message #5

WEHW40 PHEB 242105 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-242305-/O.CON.PHEB.TS.W.0012.100324T2105Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 5 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 1105 AM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING SUPPLEMENT

A TSUNAMI WARNING CONTINUES IN EFFECT FOR THE STATE OF HAWAII.

AN EARTHOUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST - ALASKA PENINSULA LOCATION MAGNITUDE - 9.0 MOMENT

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|--|--|--|--|---|--|
| TOFINO BC SKAGWAY AK LANGARA POINT BC CORDOVA AK SITKA AK YAKUTAT AK SEWARD AK KING COVE AK SAND POINT AK KODIAK AK | 59.5N 54.2N 60.6N 57.1N 59.5N 60.1N 55.1N 55.3N | 125.9W 135.3W 135.3W 145.8W 135.3W 139.7W 149.4W 162.3W 160.5W 152.5W | 2052z 2043z 2003z 2001z 1932z 1929z 1918z 1852z 1847z 1836z | 1.72M / 5.6FT 0.88M / 2.9FT 0.58M / 1.9FT 0.26M / 0.9FT 1.66M / 5.4FT 0.57M / 1.9FT 0.74M / 2.4FT 1.65M / 5.4FT 3.12M / 10.2FT 1.20M / 3.9FT | 20MIN 25MIN 22MIN 21MIN 21MIN 24MIN 19MIN 27MIN 23MIN 22MIN |
| | | | | | |

- LATITUDE (N-NORTH, S-SOUTH) - LONGITUDE (E-EAST, W-WEST) LAT

LON

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

A TSUNAMI HAS BEEN GENERATED THAT COULD CAUSE DAMAGE ALONG COASTLINES OF ALL ISLANDS IN THE STATE OF HAWAII. URGENT ACTION SHOULD BE TAKEN TO PROTECT LIVES AND PROPERTY.

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THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE IS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

PTWC Hawaii Message #6

WEHW40 PHEB 242205 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-250005-/O.CON.PHEB.TS.W.0012.100324T2205Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 6 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 1205 PM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING SUPPLEMENT

A TSUNAMI WARNING CONTINUES IN EFFECT FOR THE STATE OF HAWAII.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST LOCATION - ALASKA PENINSULA MAGNITUDE - 9.0 MOMENT

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT | LON | TIME | AMPL | PER |
|------------------|-------|--------|-----------|-------------|--------------|
| | 20 ON | 156.5W | 2147z | 2.31M / 7.6 | FT 23MIN |
| KAHULUI MAUI | | | | | |
| MOKUOLOE OAHU | | 157.8W | 2138Z | 0.36M / 1.2 | |
| NAWILIWILI KAUAI | 22.ON | 159.4W | 2133Z | 1.17M / 3.8 | FT 22MIN |
| CRESCENT CITY CA | 41.7N | 124.2W | 2131Z | 2.29M / 7.5 | FT 24MIN |
| TERN FR. FRIGATE | 23.8N | 166.2W | 2129Z | 0.86M / 2.8 | FT 23MIN |
| MIDWAY | 28.2N | 177.4W | 2111z | 0.58M / 1.9 | FT 25MIN |
| ASTORIA OR | 46.2N | 123.8W | 2110z | 1.27M / 4.1 | FT 28MIN |
| NEAH BAY WA | 48.4N | 124.6W | 2059z | 1.81M / 5.9 | FT 30MIN |
| TOFINO BC | 49.2N | 125.9W | 2052Z | 1.72M / 5.6 | FT 20MIN |
| SKAGWAY AK | 59.5N | 135.3W | 2043z | 0.88M / 2.9 | FT 25MIN |
| LANGARA POINT BC | 54.2N | 133.1W | 2003z | 0.58M / 1.9 | FT 22MIN |
| CORDOVA AK | 60.6N | 145.8W | 2001z | 0.26M / 0.9 | FT 28MIN |
| SITKA AK | 57.1N | 135.3W | 1932Z | 1.66M / 5.4 | FT 21MIN |
| YAKUTAT AK | 59.5N | 139.7W | 1929Z | 0.57M / 1.9 | FT 24MIN |
| SEWARD AK | 60.1N | 149.4W | 1918Z | 0.74M / 2.4 | FT 19MIN |
| KING COVE AK | 55.1N | 162.3W | 1852Z | 1.65M / 5.4 | FT 27MIN |

| SAND POINT AK KODIAK AK | | 3.12M / 10.2FT 1.20M / 3.9FT | |
|----------------------------|--|---------------------------------|--|
| | | | |

- LAT LATITUDE (N-NORTH, S-SOUTH) LON - LONGITUDE (E-EAST, W-WEST)
- LON LONGITUDE (E-EAST, W-WEST) TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)
- AMPL TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT. VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).
- PER PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

TSUNAMI WAVES ARE NOW IMPACTING THE COASTLINES OF ALL ISLANDS IN THE STATE OF HAWAII. URGENT ACTION SHOULD BE TAKEN TO PROTECT LIVES AND PROPERTY.

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THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE WAS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

PTWC Hawaii Message #7

WEHW40 PHEB 242305 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-250105-/O.CON.PHEB.TS.W.0012.100324T2305Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 7 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 105 PM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING SUPPLEMENT

A TSUNAMI WARNING CONTINUES IN EFFECT FOR THE STATE OF HAWAII.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST LOCATION - ALASKA PENINSULA MAGNITUDE - 9.0 MOMENT

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT LON | TIME | AMPL | PER |
|--------------------|--------------|-------|---------------|-------|
| | | | | |
| LOS ANGELES CA | 33.7N 118.3W | 2247z | 0.91M / 3.0FT | 24MIN |
| FT POINT SAN FRAN | 37.8N 122.5W | 2231Z | 0.41M / 1.3FT | 25MIN |
| HANASAKI HOKKAIDO | 43.3N 145.6E | 2225z | 0.29M / 1.0FT | 31MIN |
| KAWAIHAE HAWAII | 20.0N 155.8W | 2208Z | 0.51M / 1.7FT | 28MIN |
| KAUMALAPAU | 20.8N 157.0W | 2156Z | 0.76M / 2.5FT | 25MIN |
| HILO HAWAII | 19.7N 155.1W | 2152Z | 2.34M / 7.7FT | 21MIN |
| MONTEREY HARBOR CA | 36.6N 121.9W | 2151z | 1.26M / 4.1FT | 29MIN |

| | FO 7NT 1FC 17 | 01407 | 0 4 6 14 / | 1 5 5 5 | 1 014717 |
|-------------------|---------------|-------|------------|---------|----------|
| SEVERO KURILSK RU | 50.7N 156.1E | 2149Z | 0.46M / | 1.5FT | 19MIN |
| HONOLULU OAHU | 21.3N 157.9W | 2149Z | 0.83M / | 2.7FT | 27MIN |
| KAHULUI MAUI | 20.9N 156.5W | 2147z | 2.31M / | 7.6FT | 23MIN |
| MOKUOLOE OAHU | 21.4N 157.8W | 2138Z | 0.36M / | 1.2FT | 18MIN |
| NAWILIWILI KAUAI | 22.0N 159.4W | 2133Z | 1.17M / | 3.8FT | 22MIN |
| CRESCENT CITY CA | 41.7N 124.2W | 2131Z | 2.29M / | 7.5FT | 24MIN |
| TERN FR. FRIGATE | 23.8N 166.2W | 2129Z | 0.86M / | 2.8FT | 23MIN |
| MIDWAY | 28.2N 177.4W | 2111Z | 0.58M / | 1.9FT | 25MIN |

- LATITUDE (N-NORTH, S-SOUTH) - LONGITUDE (E-EAST, W-WEST) LAT

LON

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

- AMPL TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.
 - VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT).
- PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

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THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE WAS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

PTWC Hawaii Message #8

WEHW40 PHEB 250005 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-250205-/O.CON.PHEB.TS.W.0012.100325T0005Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 8 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 205 PM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING SUPPLEMENT

A TSUNAMI WARNING CONTINUES IN EFFECT FOR THE STATE OF HAWAII.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

| ORIGIN TIME | - | 0700 | AM HST | 24 MAR 2 | 201 |
|-------------|---|-------|----------|----------|-----|
| COORDINATES | - | 55.0 | NORTH | 157.0 WE | ST |
| LOCATION | - | ALASI | KA PENIN | ISULA | |
| MAGNITUDE | - | 9.0 | MOMENT | | |

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT LON | TIME | AMPL | PER |
|-----------------|--------------|---------|---------------|-------|
| | | | | |
| OMAEZAKI HONSHU | 34.6N 138.21 | E 2341Z | 0.44M / 1.4FT | 26MIN |

0

| SAN DIEGO CA | 32.7N 117.2W | 2302Z | 1.13M / | 3.7FT | 23MIN |
|--------------------|--------------|-------|---------|-------|-------|
| WAKE US | 19.3N 166.6E | 2301Z | 0.48M / | 1.6FT | 23MIN |
| OFUNATO HONSHU | 39.0N 141.8E | 2258Z | 0.22M / | 0.7FT | 20MIN |
| LOS ANGELES CA | 33.7N 118.3W | 2247z | 0.91M / | 3.0FT | 24MIN |
| FT POINT SAN FRAN | 37.8N 122.5W | 2231Z | 0.41M / | 1.3FT | 25MIN |
| HANASAKI HOKKAIDO | 43.3N 145.6E | 2225z | 0.29M / | 1.0FT | 31MIN |
| KAWAIHAE HAWAII | 20.0N 155.8W | 2208Z | 0.51M / | 1.7FT | 28MIN |
| KAUMALAPAU | 20.8N 157.0W | 2156Z | 0.76M / | 2.5FT | 25MIN |
| HILO HAWAII | 19.7N 155.1W | 2152Z | 2.34M / | 7.7FT | 21MIN |
| MONTEREY HARBOR CA | 36.6N 121.9W | 2151z | 1.26M / | 4.1FT | 29MIN |
| SEVERO KURILSK RU | 50.7N 156.1E | 2149Z | 0.46M / | 1.5FT | 19MIN |
| HONOLULU OAHU | 21.3N 157.9W | 2149Z | 0.83M / | 2.7FT | 27MIN |
| KAHULUI MAUI | 20.9N 156.5W | 2147z | 2.31M / | 7.6FT | 23MIN |
| MOKUOLOE OAHU | 21.4N 157.8W | 2138Z | 0.36M / | 1.2FT | 18MIN |
| NAWILIWILI KAUAI | 22.0N 159.4W | 2133Z | 1.17M / | 3.8FT | 22MIN |
| CRESCENT CITY CA | 41.7N 124.2W | 2131Z | 2.29M / | 7.5FT | 24MIN |
| TERN FR. FRIGATE | 23.8N 166.2W | 2129z | 0.86M / | 2.8FT | 23MIN |
| MIDWAY | 28.2N 177.4W | 2111Z | 0.58M / | 1.9FT | 25MIN |

LATITUDE (N-NORTH, S-SOUTH)LONGITUDE (E-EAST, W-WEST) LAT

LON

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME)

- AMPL TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.
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- PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT. PER

EVALUATION

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THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE WAS

1133 AM HST WED 24 MAR 2010

MESSAGES WILL BE ISSUED HOURLY OR SOONER AS CONDITIONS WARRANT.

NNNN

PTWC Hawaii Message #9

WEHW40 PHEB 250105 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-250305-/O.CON.PHEB.TS.W.0012.100325T0105Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 9 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 305 PM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING SUPPLEMENT

A TSUNAMI WARNING CONTINUES IN EFFECT FOR THE STATE OF HAWAII.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST LOCATION - ALASKA PENINSULA MAGNITUDE - 9.0 MOMENT

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| GAUGE LOCATION | LAT LON | TIME | AMPL | PI | ER |
|---|--|--|--|--|--|
| KAWAIHAE HAWAII KAUMALAPAU HILO HAWAII MONTEREY HARBOR CA SEVERO KURILSK RU HONOLULU OAHU KAHULUI MAUI MOKUOLOE OAHU NAWILIWILI KAUAI CRESCENT CITY CA TERN FR. FRIGATE MIDWAY | 20.0N 155.8 20.8N 157.0 19.7N 155.1 36.6N 121.9 50.7N 156.1 21.3N 157.9 20.9N 156.5 21.4N 157.8 22.0N 159.4 41.7N 124.2 23.8N 166.2 28.2N 177.4 | <pre>W 2156Z W 2152Z W 2151Z E 2149Z W 2149Z W 2147Z W 2138Z W 2133Z W 2131Z W 2129Z</pre> | 0.76M / 2.34M / 1.26M / 0.46M / 0.83M / 2.31M / 0.36M / 1.17M / 2.29M / 0.86M / | 2.5FT 251 7.7FT 211 4.1FT 291 1.5FT 191 2.7FT 271 7.6FT 231 1.2FT 181 3.8FT 221 7.5FT 241 2.8FT 231 | MIN MIN MIN MIN MIN MIN MIN MIN MIN MIN |
| MIDWAI | 20.2N 1//.4 | W ZIIIZ | 0.301 / | 1.961 251 | MITIN |

LAT - LATITUDE (N-NORTH, S-SOUTH)

LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME) AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT). PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

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THE ESTIMATED ARRIVAL TIME IN HAWAII OF THE FIRST TSUNAMI WAVE WAS

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NNNN

PTWC Hawaii Message #10

WEHW40 PHEB 250205 TSUHWX

HIZ001>003-005>009-012>014-016>021-023>026-250405-/O.CAN.PHEB.TS.W.0012.000000T0000Z-000000T0000Z/

TSUNAMI MESSAGE NUMBER 10 NWS PACIFIC TSUNAMI WARNING CENTER EWA BEACH HI 405 PM HST WED MAR 24 2010

TO - CIVIL DEFENSE IN THE STATE OF HAWAII

SUBJECT - TSUNAMI WARNING CANCELLATION

THE TSUNAMI WARNING IS CANCELLED FOR THE STATE OF HAWAII EFFECTIVE

AT 0405 PM HST.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS

ORIGIN TIME - 0700 AM HST 24 MAR 2010 COORDINATES - 55.0 NORTH 157.0 WEST - ALASKA PENINSULA LOCATION - 9.0 MOMENT MAGNITUDE

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

| LAT LON | TIME | AMPL | | PER |
|-------------|---|--|--|--|
| | | | | |
| 20.0N 155.8 | 3W 2208Z | 0.51M / | 1.7FT | 28MIN |
| 20.8N 157.0 | W 2156Z | 0.76M / | 2.5FT | 25MIN |
| 19.7N 155.1 | W 2152Z | 2.34M / | 7.7FT | 21MIN |
| 36.6N 121.9 | W 2151Z | 1.26M / | 4.1FT | 29MIN |
| 50.7N 156.1 | E 2149Z | 0.46M / | 1.5FT | 19MIN |
| 21.3N 157.9 | W 2149Z | 0.83M / | 2.7FT | 27MIN |
| 20.9N 156.5 | W 2147z | 2.31M / | 7.6FT | 23MIN |
| 21.4N 157.8 | 3W 2138Z | 0.36M / | 1.2FT | 18MIN |
| 22.0N 159.4 | W 2133Z | 1.17M / | 3.8FT | 22MIN |
| 41.7N 124.2 | 2W 2131Z | 2.29M / | 7.5FT | 24MIN |
| 23.8N 166.2 | 21292 W | 0.86M / | 2.8FT | 23MIN |
| 28.2N 177.4 | W 2111Z | 0.58M / | 1.9FT | 25MIN |
| | 20.0N 155.8 20.8N 157.0 19.7N 155.1 36.6N 121.9 50.7N 156.1 21.3N 157.6 20.9N 156.5 21.4N 157.8 22.0N 159.4 41.7N 124.2 23.8N 166.2 | 20.0N 155.8W 2208Z 20.8N 157.0W 2156Z 19.7N 155.1W 2152Z 36.6N 121.9W 2151Z 50.7N 156.1E 2149Z 21.3N 157.9W 2149Z 20.9N 156.5W 2147Z 21.4N 157.8W 2138Z 22.0N 159.4W 2133Z 41.7N 124.2W 2131Z 23.8N 166.2W 2129Z | 20.0N 155.8W 2208Z 0.51M / 20.8N 157.0W 2156Z 0.76M / 19.7N 155.1W 2152Z 2.34M / 36.6N 121.9W 2151Z 1.26M / 50.7N 156.1E 2149Z 0.46M / 21.3N 157.9W 2149Z 0.83M / 20.9N 156.5W 2147Z 2.31M / 21.4N 157.8W 2138Z 0.36M / 22.0N 159.4W 2133Z 1.17M / 41.7N 124.2W 2131Z 2.29M / 23.8N 166.2W 2129Z 0.86M / | 20.0N 155.8W 2208Z 0.51M / 1.7FT 20.8N 157.0W 2156Z 0.76M / 2.5FT 19.7N 155.1W 2152Z 2.34M / 7.7FT 36.6N 121.9W 2151Z 1.26M / 4.1FT 50.7N 156.1E 2149Z 0.46M / 1.5FT 21.3N 157.9W 2149Z 0.83M / 2.7FT 20.9N 156.5W 2147Z 2.31M / 7.6FT 21.4N 157.8W 2138Z 0.36M / 1.2FT 20.0N 159.4W 2133Z 1.17M / 3.8FT 41.7N 124.2W 2131Z 2.29M / 7.5FT 23.8N 166.2W 2129Z 0.86M / 2.8FT |

LAT - LATITUDE (N-NORTH, S-SOUTH) LON - LONGITUDE (E-EAST, W-WEST)

TIME - TIME OF THE MEASUREMENT (Z IS UTC IS GREENWICH TIME) AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL. IT ISNOT... CREST-TO-TROUGH WAVE HEIGHT.

VALUES ARE GIVEN IN BOTH METERS(M) AND FEET(FT)

PER - PERIOD OF TIME IN MINUTES(MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION

BASED ON ALL AVAILABLE DATA THE TSUNAMI THAT IMPACTED THE STATE OF HAWAII HAS NOW PASSED. THEREFORE THE TSUNAMI WARNING FOR HAWAII IS CANCELLED.

HOWEVER SOME COASTAL AREAS MAY CONTINUE TO EXPERIENCE SEA LEVEL CHANGES AND STRONG OR UNUSUAL CURRENTS LASTING SEVERAL HOURS OR LONGER.

THIS TSUNAMI WARNING CANCELLATION DOES NOT MEAN IT IS NOW SAFE TO RESUME NORMAL ACTIVITIES OR REENTER EVACUATED SHORELINE AREAS. YOUR COUNTY CIVIL DEFENSE AGENCY AND POLICE DEPARTMENT WILL MAKE THIS DETERMINATION. STAY TUNED TO YOUR LOCAL BROADCAST STATION FOR THE CIVIL DEFENSE -ALL CLEAR- ANNOUNCEMENT FOR YOUR AREA.

REPEAT -

DO NOT REENTER EVACUATED SHORELINE AREAS UNTIL ANNOUNCED BY YOUR COUNTY CIVIL DEFENSE AGENCY. STAY TUNED TO YOUR LOCAL BROADCAST STATION FOR THE -ALL CLEAR- ANNOUNCEMENT FOR YOUR AREA. PLEASE YIELD TO ROADBLOCKS AND UNIFORMED OFFICERS WHO ARE CONTROLLING REENTRY INTO EVACUATED SHORELINE AREAS.

THIS WILL BE THE FINAL MESSAGE ISSUED FOR THIS EVENT UNLESS ADDITIONAL DATA ARE RECEIVED.

NNNN

Appendix E. WCATWC Web-based Products

Graphical and web-based products are posted to the WCATWC web site during an event. This Appendix contains examples of several of these. The first is the html-based text message with embedded links.

To: U.S. West Coast, Alaska, and British Columbia coastal regions From: <u>NOAA/NWS/West Coast and Alaska Tsunami Warning Center</u> Subject: <u>Tsunami Warning and Watch</u> #1 issued 03/24/2010 at 9:07AM AKDT

A <u>Tsunami Warning</u> is in effect which includes the coastal areas of British Columbia and Alaska from the north tip of Vancouver Island, British Columbia to Attu, Alaska.

A <u>Tsunami Watch</u> is in effect which includes the coastal areas of California, Oregon, Washington and British Columbia from the California-Mexico border to the north tip of Vancouver Island, British Columbia.

A **Tsunami Warning** means that all coastal residents in the <u>warning area</u> who are near the beach or in low-lying regions should move immediately inland to higher ground and away from all harbors and inlets including those sheltered directly from the sea. Those feeling the earth shake, seeing unusual wave action, or the water level rising or receding may have only a few minutes before the tsunami arrival and should move immediately. Homes and small buildings are not designed to withstand tsunami impacts. Do not stay in these structures.

All residents within the warned area should be alert for instructions broadcast from their local civil authorities. This tsunami warning is based solely on earthquake information - the tsunami has not yet been confirmed.

A **Tsunami Watch** means that all coastal residents in the <u>watch area</u> should prepare for possible evacuation. A tsunami watch is issued to areas which will not be immediately impacted by the tsunami. Watch areas will either be upgraded to warning or advisory status, or canceled.

At 9:00 AM Alaskan Daylight Time on March 24, an <u>earthquake</u> with preliminary magnitude 9.0 <u>occurred 105 miles/169 Km southeast of Chignik</u>, <u>Alaska</u>. (Refer to the <u>United States Geological Survey</u> for official earthquake parameters.) This earthquake **may have** generated a tsunami. If a tsunami has been generated, the waves will first reach Sand Point, Alaska at 10:25 AM AKDT on March 24. Estimated <u>tsunami arrival times</u> and <u>maps</u> along with <u>safety rules</u> and <u>other information</u> can be found on the <u>WCATWC</u> web site.

<u>Tsunamis</u> can be dangerous waves that are not survivable. Wave heights are amplified by irregular shoreline and are difficult to forecast. Tsunamis often appear as a strong surge and may be preceded by a receding water level. Mariners in water deeper than 187 meters should not be affected by a tsunami. Wave heights will increase rapidly as water shallows. Tsunamis are

a series of ocean waves which can be dangerous for several hours after the initial wave arrival. DO NOT return to evacuated areas until an all clear is given by local civil authorities.

The <u>Pacific Tsunami Warning Center</u> in Ewa Beach, Hawaii will issue messages for Hawaii and other areas of the Pacific outside the states and provinces listed above.

This message will be updated in 30 minutes or sooner if the situation warrants. The tsunami message will remain in effect until further notice. For further information stay tuned to NOAA Weather Radio, your local TV or radio stations, or see the <u>WCATWC</u> web site.

Link to Standard Warning Message Link to Public Warning Message Link to XML/CAP Message Link to Printable Message

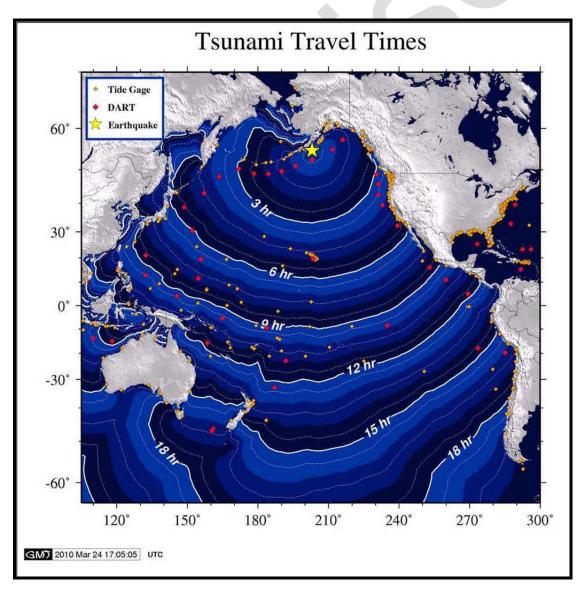


Figure E1: Tsunami Travel Time Map generated after issuing Bulletin 1

Tsunami travel time list example below.

The following list gives estimated times of arrival for locations along the North American Pacific coast from a tsunami generated at the given source location. The list is ordered by arrival time starting with the earliest. Since tsunami speed is directly related to water depth, tsunami ETAs can be computed independent of tsunami amplitude. THE LISTING OF A TSUNAMI ARRIVAL TIME BELOW DOES NOT INDICATE A WAVE IS IMMINENT. The listed arrival time is the initial wave arrival. Tsunamis can be dangerous for many hours after arrival, and the initial wave is not necessarily the largest. Source: Lat: 55.0N Lnq: 157.0W 9.0 Maq: 0-time: 1700UTC MAR 24 Date: Estimated times of initial tsunami arrival: DART 46403 0924 AKDT MAR 24 1724 UTC MAR 24 DART 46409 0948 AKDT MAR 24 1748 UTC MAR 24 DART 46402 0953 AKDT MAR 24 1753 UTC MAR 24 DART 46410 1013 AKDT MAR 24 1813 UTC MAR 24 DART 46408 1020 AKDT MAR 24 1820 UTC MAR 24 Perryville, Alaska 1023 AKDT MAR 24 1823 UTC MAR 24 Sand Point, Alaska 1025 AKDT MAR 24 1825 UTC MAR 24 Akutan, Alaska 1032 AKDT MAR 24 1832 UTC MAR 24 1033 AKDT MAR 24 1833 UTC MAR 24 King Cove, Alaska Nikolski, Alaska 1039 AKDT MAR 24 1839 UTC MAR 24 DART 46413 1042 AKDT MAR 24 1842 UTC MAR 24 Dutch Harbor, Alaska 1045 AKDT MAR 24 1845 UTC MAR 24 1046 AKDT MAR 24 1846 UTC MAR 24 Kodiak, Alaska Atka, Alaska 1048 AKDT MAR 24 1848 UTC MAR 24 Old Harbor, Alaska 1048 AKDT MAR 24 1848 UTC MAR 24 Cold Bay, Alaska 1108 AKDT MAR 24 1908 UTC MAR 24 1110 AKDT MAR 24 1910 UTC MAR 24 Adak, Alaska DART 21414 1110 AKDT MAR 24 1910 UTC MAR 24 Seward, Alaska 1111 AKDT MAR 24 1911 UTC MAR 24 Amchitka, Alaska 1111 AKDT MAR 24 1911 UTC MAR 24 Alitak, Alaska 1112 AKDT MAR 24 1912 UTC MAR 24 Elfin Cove, Alaska 1113 AKDT MAR 24 1913 UTC MAR 24 Yakutat, Alaska 1120 AKDT MAR 24 1920 UTC MAR 24 Sitka, Alaska 1921 UTC MAR 24 1121 AKDT MAR 24 Port Alexander, Alaska 1122 AKDT MAR 24 1922 UTC MAR 24 1930 UTC MAR 24 1130 AKDT MAR 24 Valdez, Alaska Langara Island, British Columbia 1230 PDT MAR 24 1930 UTC MAR 24 DART 21415 1138 AKDT MAR 24 1938 UTC MAR 24 Cordova, Alaska 1140 AKDT MAR 24 1940 UTC MAR 24 Shemva, Alaska 1153 AKDT MAR 24 1953 UTC MAR 24 DART 46419 1258 PDT MAR 24 1958 UTC MAR 24 Attu, Alaska 1200 AKDT MAR 24 2000 UTC MAR 24 1204 AKDT MAR 24 2004 UTC MAR 24 Homer, Alaska St. Paul, Alaska 1206 AKDT MAR 24 2006 UTC MAR 24 2015 UTC MAR 24 DART 46404 1315 PDT MAR 24 The north tip of Vancouver Island, British 2016 UTC MAR 24 Columbia 1316 PDT MAR 24 Craig, Alaska 1221 AKDT MAR 24 2021 UTC MAR 24 2027 UTC MAR 24 DART 46407 1327 PDT MAR 24 Ketchikan, Alaska 1228 AKDT MAR 24 2028 UTC MAR 24 Juneau, Alaska 1230 AKDT MAR 24 2030 UTC MAR 24 Tofino, British Columbia 1356 PDT MAR 24 2056 UTC MAR 24 1356 PDT MAR 24 2056 UTC MAR 24 DART 46411 Prince Rupert, British Columbia PDT MAR 24 2059 UTC MAR 24 1359 the Washington-British Columbia border 1402 PDT MAR 24 2102 UTC MAR 24 Neah Bay, Washington 1408 PDT MAR 24 2108 UTC MAR 24 La Push, Washington 1409 PDT MAR 24 2109 UTC MAR 24 2109 UTC MAR 24 the Oregon-Washington border 1409 PDT MAR 24 Point Grenville, Washington 1411 PDT MAR 24 2111 UTC MAR 24 Cape Blanco, Oregon PDT MAR 24 2112 UTC MAR 24 1412 Cascade Head, Oregon 1414 PDT MAR 24 2114 UTC MAR 24

Tillamook Bay, Oregon Charleston, Oregon Cape Mendocino, California Seaside, Oregon Westport, Washington Newport, Oregon Humboldt Bay, California the Oregon-California border Crescent City, California Fort Bragg, California Point Arena, California Astoria, Oregon Port Angeles, Washington Point Reyes, California Point Sur, California Monterey, California Port Moller, Alaska Bella Bella, British Columbia DART 46412 Point Concepcion, California San Francisco, California Port San Luis, California Santa Barbara, California Seattle, Washington Saint Matthew Island, Alaska San Pedro, California Santa Monica, California Newport Beach, California La Jolla, California the California-Mexico border Cape Newenham, Alaska Gambell, Alaska Dillingham, Alaska Hooper Bay, Alaska Little Diomede Island, Alaska Nome, Alaska Unalakleet, Alaska

| 1415 | PDT | MAR | 24 | 2115 | UTC | MAR | 24 | |
|------|------|-----|----|------|-----|-----|----|--|
| 1416 | PDT | MAR | 24 | 2116 | UTC | MAR | 24 | |
| 1419 | PDT | MAR | 24 | 2119 | UTC | MAR | 24 | |
| 1421 | PDT | MAR | 24 | 2121 | UTC | MAR | 24 | |
| 1422 | PDT | MAR | 24 | 2122 | UTC | MAR | 24 | |
| 1424 | PDT | MAR | 24 | 2124 | UTC | MAR | 24 | |
| 1424 | PDT | MAR | 24 | 2124 | UTC | MAR | 24 | |
| 1425 | PDT | MAR | 24 | 2125 | UTC | MAR | 24 | |
| 1425 | PDT | MAR | 24 | 2125 | UTC | MAR | 24 | |
| 1427 | PDT | MAR | 24 | 2127 | UTC | MAR | 24 | |
| 1433 | PDT | MAR | 24 | 2133 | UTC | MAR | 24 | |
| 1441 | PDT | MAR | 24 | 2141 | UTC | MAR | 24 | |
| 1445 | PDT | MAR | 24 | 2145 | UTC | MAR | 24 | |
| 1447 | PDT | MAR | 24 | 2147 | UTC | MAR | 24 | |
| 1453 | PDT | MAR | 24 | 2153 | UTC | MAR | 24 | |
| 1455 | PDT | MAR | 24 | 2155 | UTC | MAR | 24 | |
| 1401 | AKDT | MAR | 24 | 2201 | UTC | MAR | 24 | |
| 1502 | PDT | MAR | 24 | 2202 | UTC | MAR | 24 | |
| 1510 | PDT | MAR | 24 | 2210 | UTC | MAR | 24 | |
| 1512 | PDT | MAR | 24 | 2212 | UTC | MAR | 24 | |
| 1517 | PDT | MAR | 24 | 2217 | UTC | MAR | 24 | |
| 1518 | PDT | MAR | 24 | 2218 | UTC | MAR | 24 | |
| 1532 | PDT | MAR | 24 | 2232 | UTC | MAR | 24 | |
| 1541 | PDT | MAR | 24 | 2241 | UTC | MAR | 24 | |
| 1446 | AKDT | MAR | 24 | 2246 | UTC | MAR | 24 | |
| 1548 | PDT | MAR | 24 | 2248 | UTC | MAR | 24 | |
| 1548 | PDT | MAR | 24 | 2248 | UTC | MAR | 24 | |
| 1554 | PDT | MAR | 24 | 2254 | UTC | MAR | 24 | |
| 1559 | PDT | MAR | 24 | 2259 | UTC | MAR | 24 | |
| 1605 | PDT | MAR | 24 | 2305 | UTC | MAR | 24 | |
| 1535 | AKDT | MAR | 24 | 2335 | UTC | MAR | 24 | |
| 1705 | AKDT | MAR | 24 | 0105 | UTC | MAR | 25 | |
| 1725 | AKDT | MAR | 24 | 0125 | UTC | MAR | 25 | |
| 1859 | AKDT | MAR | 24 | 0259 | UTC | MAR | 25 | |
| 2002 | AKDT | MAR | 24 | 0402 | UTC | MAR | 25 | |
| 2157 | AKDT | MAR | 24 | 0557 | UTC | MAR | 25 | |
| 0046 | AKDT | MAR | 25 | 0846 | UTC | MAR | 25 | |
| | | | | | | | | |

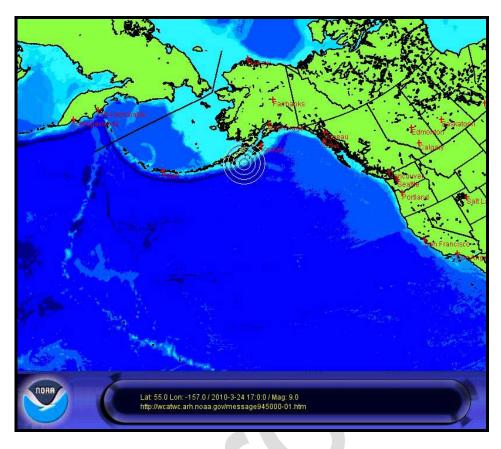


Figure E2: Small-scale map issued with Bulletin 1

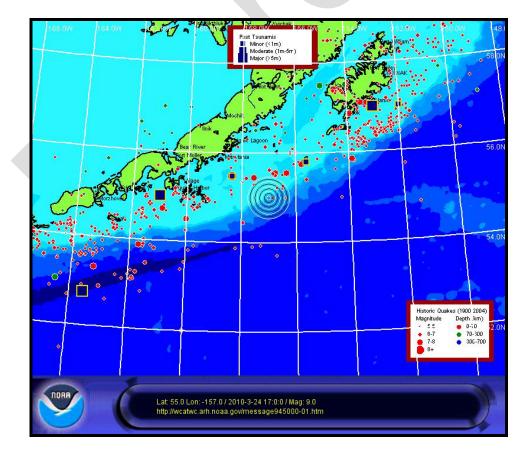


Figure E3: Large-scale map issued with Bulletin 1

Appendix F. Sample Press Release for Local Media

TEMPLATE FOR NEWS RELEASE

USE AGENCY MASTHEAD

Contact: (insert name) (insert phone number) (insert email address) FOR IMMEDIATE RELEASE (insert date)

NORTH PACIFIC TSUNAMI EXERCISE TO BE CONDUCTED MARCH 24, 2010

(*insert community/county/state name*) will join other localities in the Pacific as a participant in a tsunami response exercise on March 24, 2010. The purpose of this exercise is to evaluate local tsunami response plans, increase tsunami preparedness, and improve coordination throughout the region.

(insert a promotional comment from a local official, such as "The 2004 Indian Ocean tsunami brought to the attention of the world the urgent need to be more prepared for such events," said (insert name of appropriate official). "This important exercise will test the current procedures of the Tsunami Warning System and help identify operational strengths and weaknesses in each community." (*Please modify for uniqueness.*))

The exercise, titled PACIFEX 10, will simulate a widespread Tsunami Warning and Advisory situation along U.S. and Canadian Pacific coasts requiring implementation of local tsunami response plans. The exercise will (*insert "include" or "not include"*) public notification.

The exercise will simulate a major earthquake and tsunami generated near Alaska's Shumagin Islands at 10:00 am Pacific Daylight Time (*or appropriate local time*) on March 24, 2010. Exercise participants will be provided with a handbook which describes the scenario and contains tsunami messages from both the West Coast/Alaska Tsunami Warning Center (WCATWC) and the Pacific Tsunami Warning Center (PTWC).

Insert paragraph tailored for specific community. Could identify participating agencies and specific plans. Could describe current early warning program, past tsunami exercises (if any), ongoing mitigation and public education programs, etc. Could describe tsunami threat, history of tsunami hazards, if any. If any real tsunami threat occurs during the time period of the exercise, the exercise will be terminated.

The exercise is sponsored by the U.S. National Oceanic and Atmospheric Administration (NOAA) and by the U.S. National Tsunami Hazard Mitigation Program (NTHMP – a partnership of 28 states and territories and three federal agencies). For more information on the U.S. tsunami warning system, see <u>www.tsunami.gov</u>. For more information on the NTHMP, see <u>nthmp.tsunami.gov</u>.

###

On the Web: West Coast/Alaska Tsunami Warning Center Pacific Tsunami Warning Center NOAA Tsunami Program

NTHMP: Insert state/local emergency response URLs http://wcatwc.arh.noaa.gov http://www.prh.noaa.gov/ptwc http://www.tsunami.gov http://tsunami.noaa.gov http://nthmp.tsunami.gov

Appendix G. Post-Exercise Evaluation

All participating agencies are requested to provide brief feedback on the exercise. This feedback will assist the NTHMP and NOAA in the evaluation of PACIFEX 10 and the development of subsequent exercises.

Please fill out and return the form by Friday, April 9, 2010 to:

For Alaska, the U.S. West Coast, and the west coast of Canada

WCATWC Director NOAA/West Coast/Alaska Tsunami Warning Center 910 South Felton Street Palmer, Alaska 99645

FAX: 907-745-6071

Or scanned and emailed to paul.whitmore@noaa.gov.

For Hawaii

PTWC Director NOAA Pacific Tsunami Warning Center 91-270 Fort Weaver Road Ewa Beach, HI 96706

Fax: 808-689-4543

Or scanned and emailed to charles.mccreery@noaa.gov

PACIFEX 10 Tsunami Response Exercise Evaluation Form For Official Use Only

Participant Location: _____

Participant Agency: _____

Agency Contact Information:

| Name: | |
|-------------------|--|
| Address: | |
| City, State, Zip: | |
| Phone: | |
| Email: | |

Please answer the following questions and provide any suggestions.

Was the exercise format satisfactory?

Did you receive the "dummy" message from the WCATWC or PTWC to start the exercise? If so, through what channel(s) and approximately what time was it received?

Was the content and intention of the tsunami messages clear?

Should any other content be added to the messages, or was any superfluous?

Did your agency have a tsunami response plan in place prior to the exercise?

If so, was the response plan adequate to address the event?

What actions did the agency take during the exercise?

Were the emergency management actions during the event clearly laid out by the plan?

During a real event, how is the local population notified of any tsunami danger?

Was any feedback received from the public?

Are the potential tsunami danger zones known in your area?

Was the exercise helpful in validating the response plan or showing that it was not sufficient?