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Operations and Services
Tsunami Warning Services, NWSPD 10-7
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ALASKA REGION TSUNAMI WARNING OPERATIONS

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SUMMARY OF REVISIONS: This supplement supersedes Alaska Region Supplement 03-2017, Alaska Region Tsunami Warning Operations, and dated March 28, 2017.

2/2019 Revisions:

1. Updated location of PTWC owing to office relocation in Section 1.1
2. Clarified ARH SOD responsibilities in Section 1.2
3. Clarified the description of Table 2 in Section 2.2
4. Updated Sections 3.1, 3.2, and 3.3 to reflect the AR regional director's decision for NTWC to contact the AR ROC for all tsunami warning events, not the Anchorage WFO
5. Updated web link for current TsunamiReady® communities in Section 4
6. Updated Section 5.2 to reflect that the Live Code Test is not required to take place every March

/Signed/ Regional Director March 7, 2019
Carven Scott Date
NWS Alaska Regional Director

1. Introduction

This Regional Supplement describes responsibilities and provides guidance to the National Weather Service (NWS) offices in Alaska regarding support of the Tsunami Program. Support components include dissemination of tsunami products issued by the National Tsunami Warning Center (NTWC), TsunamiReady® Education and Outreach, and participation in Tsunami Communication Tests. A tsunami event is uncommon, and NWS readiness is critical for effective dissemination of tsunami alerts.

1.1 National Tsunami Warning Center

The NTWC, located in Palmer, Alaska, is the official and authoritative source issuing all Tsunami Warnings, Advisories, Watches, and Information Statements for Alaska. NTWC responsibilities are described in greater detail in National Weather Service Policy Directive (NWSPD) 10-7, Tsunami Warning Services, and National Weather Service Instruction (NWSI) 10-701 Tsunami Warning Center Operations. The Pacific Tsunami Warning Center (PTWC) headquartered on Ford Island, Hawaii has backup responsibility for the NTWC.

1.2 NWS Alaska Regional Headquarters

The NWS Alaska Regional Headquarters (ARH), located in Anchorage, Alaska, is responsible for supporting all NWS offices in the state of Alaska including the NTWC and each of the Weather Forecast Offices (WFOs). The Regional Operations Center (ROC) at ARH coordinates decision support service activity through the NWS Alaska Region and is the focal point for coordination and delivery of information for NWS leadership and other government agencies. The Systems Operations Division at ARH provides regional management, planning, and direction for the integration, operation, and support of all tsunami dissemination and information systems. In addition, the Alaska Region Tsunami Program is managed by the Environmental Science and Services Division (ESSD) branch at ARH. The Tsunami Program Manager at ESSD is responsible for supporting all aspects of the Tsunami Program.

1.3 Alaska Weather Forecast Offices

The NWS Alaska Region has three Weather Forecast Offices located in Juneau, Anchorage, and Fairbanks, Alaska. Each WFO is responsible for planning and taking appropriate action to disseminate Tsunami Warnings, Advisories, and Watches received from the NTWC that impact communities within their corresponding Area of Responsibility (AOR). Details regarding the dissemination process may be found in Section 3 of this document.

The individual WFOs maintain specific instructions for tsunami message dissemination within their Station Duty Manuals. Each WFO is responsible for ensuring the readiness of all staff and systems through routine tsunami message dissemination drills internal to the WFO, and through routine Tsunami Communication Tests. In addition, the WFO Warning Coordination Meteorologist (WCM) works with the ARH Tsunami Program Manager to certify local communities as TsunamiReady® and coordinates education and outreach activities promoting the TsunamiReady® Program.

1.4 Alaska's Division of Homeland Security and Emergency Management

Upon receiving the notification of the tsunami products issued by the NTWC, local Emergency Managers have the ultimate responsibility in calling for evacuations, thus it is critical that the NWS Alaska Region Offices cooperate with Alaska's emergency managers and other non-NWS agencies involved in the protection of life and property.

The Alaska Division of Homeland Security and Emergency Management (DHSEM) develops tsunami warning procedures, plans, and educational materials within their organization. The NWS Alaska Region may accommodate DHSEM and others with aid in warning dissemination when possible without

compromising the NWS mission. Dissemination procedures are included in local station duty manuals that vary by location, and the responsible field office manager will coordinate with local officials.

2. Alaska Tsunami Products

A comprehensive description of NTWC products, message definitions, and criteria required for issuance may be found in NWSI 10-701, Tsunami Warning Center Operations. This section contains an abbreviated summary of the tsunami products and codes applicable to NWS Alaska offices, and reference breakpoints for the state.

2.1 Tsunami Product Definitions

A ***Tsunami Warning*** is issued when a tsunami with the potential to generate widespread inundation is imminent, expected, or occurring. Warnings alert the public that dangerous coastal flooding accompanied by powerful currents is possible and may continue for several hours after initial arrival. Warnings alert emergency management officials to take action for the entire tsunami hazard zone. Appropriate actions to be taken by local officials may include the evacuation of low-lying coastal areas, and the repositioning of ships to deep waters when there is time to safely do so. Warnings may be updated, adjusted geographically, downgraded, or canceled. To provide the earliest possible alert, initial warnings are normally based only on seismic information.

A ***Tsunami Advisory*** is issued when a tsunami with the potential to generate strong currents or waves dangerous to those in or very near the water is imminent, expected, or occurring. The threat may continue for several hours after initial arrival, but significant inundation is not expected for areas under an advisory. Appropriate actions to be taken by local officials may include closing beaches, evacuating harbors and marinas, and the repositioning of ships to deep waters when there is time to safely do so. Advisories are normally updated to continue the Advisory, expand/contract affected areas, upgrade to a Warning, or cancel the Advisory.

A ***Tsunami Watch*** is issued to alert emergency management officials and the public of an event which may later impact the watch area. The watch area may be upgraded to a Warning or Advisory - or canceled - based on updated information and analysis. Therefore, emergency management officials and the public should prepare to take action. Watches are normally issued based on seismic information without confirmation that a destructive tsunami is underway.

A ***Tsunami Information Statement*** is issued to inform emergency management officials and the public that an earthquake has occurred, or that a Tsunami Warning, Watch or Advisory has been issued for another section of the ocean. In most cases, Information Statements are issued to indicate there is no threat of a destructive basin wide tsunami and to prevent unnecessary evacuations as the earthquake may have been felt in coastal areas. An Information Statement may, in appropriate situations, caution about the possibility of destructive local tsunamis. Information Statements may be re-issued with additional information, though normally these messages are not updated. However, a Watch, Advisory or Warning may be issued for the area, if necessary, after analysis and/or updated information becomes available.

A ***Cancellation*** is the final product issued indicating the end of the damaging tsunami threat. A Cancellation is usually issued after an evaluation of sea level data confirms that a destructive tsunami will not impact the Warning, Advisory, or Watch area, or has subsided to a non-damaging level.

2.2 Product Codes, Content, and Format

The NTWC issues three products each time a Tsunami Warning, Advisory, or Watch is issued. The TSUWCA, is the segmented product containing Valid Time Event Codes (VTEC), Universal Geographic Codes (UGC), and has the verbiage that supports text-to-speech conversion. This TSUWCA product is

intended for automated dissemination systems and is the primary product of interest to the WFOs. The TSUAK1 and TSUSPN are also produced each time a Tsunami Warning, Advisory, or Watch is issued. They are bulleted text products designed for the general public in an easy to read format with one available in English (TSUAK1) and one available in Spanish (TSUSPN).

Table 1 depicts all Alaska Tsunami Products including Tsunami Information Statements issued by the NTWC along with the corresponding Advanced Weather Interactive Processing System (AWIPS) Codes, World Meteorological (WMO) Codes, and a brief description of each product.

Table 1 Alaska Tsunami Product Codes and Explanations

AWIPS Code	WMO Code	Segmented VTEC/UGC Product	Public Text Product	Product Explanation for WFOs
TSUWCA	WEPA41 PAAQ	X		Segmented Tsunami Warnings, Advisories, & Watches To be disseminated by the WFOs
TSUAK1	WEAK51 PAAQ		X	Bulleted Public Product for Tsunami Warnings, Advisories, & Watches
TSUSPN	WEAK61 PAAQ		X	Analogous to TSUAK1 in Spanish
TIBAK1	WEAK53 PAAQ		X	Public Tsunami Information Statement
TIBSPN	WEAK63 PAAQ		X	Analogous to TIBAK1 in Spanish

2.3 NTWC Breakpoints

NTWC Warning, Advisory, and Watch products specify coastal regions in Alaska by four sections: Southeast Alaska, South Alaska and the Alaska Peninsula, the Aleutian Islands, and the North and West Coasts. Within these four sections, special areas may be called out such as Cook Inlet or the Inner Coast for Southeast Alaska. Breakpoints within each section are also specified to help refine alert areas within the larger zones. Table 2 displays all Alaska coastal region sections and breakpoints within each section.

Table 2 NTWC Coastal Regions and Breakpoints

Coastal Region Section	North and West Coasts	Aleutian Islands	South Alaska and the Alaska Peninsula	Southeast Alaska
Breakpoints	Alaska/Canada Border Wainwright Cape Prince of Wales Cape Romanzof Kuskokwim Bay Unimak Pass	Attu Amchitka Pass Samalga Pass Unimak Pass	Unimak Pass Chignik Bay Kennedy Entrance Hinchinbrook Entrance Cape Suckling Cape Fairweather	Cape Fairweather Salisbury Sound Cape Decision Alaska/Canada Border

3. Tsunami Message Dissemination

This section contains general Tsunami Warning, Advisory, and Watch (TSU) Product dissemination responsibilities for each NWS Alaska office. Complete detailed dissemination procedures may be found in individual NWS Alaska Office Station Duty Manuals. In addition, Appendix A may be referenced for a flowchart detailing the product dissemination via NOAA Weather Radio (NWR) from NWS forecast offices to communities in Alaska.

3.1 National Tsunami Warning Center Responsibility

The NTWC is the official and authoritative source issuing all Tsunami Warning, Advisory, and Watch (TSU) products for Alaska. A complete detailed description of all tsunami message dissemination paths may be found in the local NTWC Operations Manual.

In the event of tsunami, the NTWC will send out a TSU product to the WFOs through the following pathways:

- Via AWIPS with the code: TSUWCA
- Via a voice announcement over NAWAS
- Via a direct phone call to the Alaska Region ROC
- Via Text/SMS
- Via Twitter
- Via Email
- Via Facebook

3.2 Alaska Weather Forecast Office Responsibility

The three Weather Forecast Offices in Alaska are responsible for disseminating TSU products received from the NTWC through the NOAA Weather Radio System, which activates the Emergency Alert System (EAS). The EAS is the most fundamental of all warning systems. Through it, the local broadcasters are able to get the message out over radio and television channels to warn the general public. Dissemination of the products produced by the NTWC is essential to warn the public of a possible crisis within a critical time frame, usually between five to fifteen minutes.

Tsunami warnings, advisories, and watches are handled and disseminated by NWS offices with the highest possible priority. The following procedures will be followed upon receipt of a tsunami warning, advisory, or watch TSU product from the NTWC.

Notification of an issued Tsunami Warning/Advisory/Watch TSU product will be received by each WFO through the following pathways:

- Via AWIPS with the code: TSUWCA
- Via a voice announcement over NAWAS

Upon receiving notification of a Tsunami Warning/Advisory/Watch TSU product each WFO will have the responsibility to complete dissemination of the Tsunami Products:

- Follow local office Tsunami Procedures to distribute the TSUWCA product over NWR
    - Distribution over NWR will trigger activation of the EAS where available as defined by the Alaska State EAS Plan
- Ensure tsunami message has successfully transmitted over NWR

Once the initial Tsunami Warning/Advisory/Watch product has been verified for successful dissemination, each WFO will continue the following monitoring procedures:

- Participate in any conference calls led by the NTWC

- Monitor for additional TSU products (Updates may be sent out every 30 mins to 2 hr by NTWC)
    - Upon receiving notification of any new TSU products follow guidelines above
    - Continue these procedures until a Cancellation TSU product is received and verified for dissemination

Once a Tsunami event has concluded:

- The WCM for each WFO will collect event information and distribute to all necessary parties.

3.3 Regional Operations Center Responsibility

Notification of an issued Tsunami Warning/Advisory/Watch TSU product will be received by the individual on duty for the ROC:

- Via a phone call from staff at the National Tsunami Warning Center
- Via Email

Upon receiving the notification of a Tsunami Warning/Advisory/Watch TSU product, the individual on duty for the ROC will:

- Follow the local ROC Station Manual to notify NWS leadership and other government agencies
- Participate in any conference calls led by the NTWC
- Continue to monitor the event and provide support to NWS Alaska Region Offices

4. TsunamiReady®, Outreach, and Education

This section contains general a general overview of the NWS TsunamiReady® program and the roles and responsibilities for each NWS Alaska office. Detailed documentation on the TsunamiReady® program may be found in NWSI 10-704, The TsunamiReady® Recognition Program.

Primary responsibility for tsunami education and outreach as well as certifying TsunamiReady® communities belongs with the Warning Coordination Meteorologist (WCM) at the Alaska WFOs.

A list of current TsunamiReady® communities for the state of Alaska may be found at: https://www.weather.gov/tsunamiready/ak-tr

The last week in March is normally designated Tsunami Preparedness Week by the Governor of Alaska to highlight tsunami readiness. During this week, communities are encouraged to conduct tsunami awareness activities and exercises. The NTWC, in coordination with PTWC and the National Tsunami Hazard Mitigation Program (NTHMP), may prepare table top scenarios for that purpose. WCMs from each WFO are recommended to take advantage of this window to promote tsunami preparedness and TsunamiReady® outreach activities in their local communities.

5. Tsunami Communication Tests

This final section discusses tsunami communication tests, which verify communication pathways between the NTWC and primary recipients as well as the timeliness of message delivery over those pathways. Primary recipients of tsunami communication tests include: designated national focal points, state/territorial warning points, Weather Forecast Offices, U.S. Coast Guard, and critical military dissemination points.

5.1 Monthly Tsunami Test

Tests of the communications system between NTWC, WFOs, and other government entities such as DHSEM and the U.S. Coast Guard, are conducted by the NTWC monthly without notification.

Notification of monthly tsunami test will be received by each WFO through the following pathways:

- Via a voice test announcement over NAWAS
- Via AWIPS with a test message similar to the message seen in Appendix A

WFOs should respond with an acknowledgement to the NTWC.

5.2 Live Code Test

Annually, the NTWC may issue a live-code test in coordination with the Alaska State Emergency Communications Committee (SECC) made up of members of the Federal Communications Commission (FCC), the Alaska Broadcasters Association (ABA), the State of Alaska's DHSEM, and the NWS Alaska Region representatives. This test typically corresponds with Tsunami Preparedness Week, the last week of March. Years past has proven this as an excellent opportunity to evaluate the complete message dissemination process, and ensure the systems are working properly in the event of a real tsunami warning. On occasion some local communities may organize mock evacuations or other awareness activities corresponding with the live code test.

Public notices for all live code tests are sent out to communities via newspaper, television, radio, and the internet of the upcoming test. A web site address for feedback is provided and citizens are encouraged to report how the message was received following the test.

Appendix A Monthly Tsunami Communications Test Example

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WEPA41 PAAQ 120056
TSUWCA

TEST...TSUNAMI MESSAGE NUMBER 1...TEST
NWS NATIONAL TSUNAMI WARNING CENTER PALMER AK
556 PM PDT MON APR 11 2016

...THIS_MESSAGE_IS_FOR_TEST_PURPOSES_ONLY...

...THIS IS A TEST TO DETERMINE TRANSMISSION TIMES INVOLVED IN THE
   DISSEMINATION OF TSUNAMI INFORMATION...


RESPONSES ARE REQUIRED FROM
---------------------------
 * ALL COASTAL WEATHER FORECAST OFFICES IN ALASKA... WASHINGTON...
   OREGON AND CALIFORNIA

 * USAF 11TH RESCUE COORDINATION CENTER AT ELMENDORF AFB

 * CALIFORNIA... OREGON... WASHINGTON AND ALASKA STATE WARNING POINTS

 * EMERGENCY MANAGEMENT BRITISH COLUMBIA

 * THE PACIFIC STORM PREDICTION CENTRE IN BRITISH COLUMBIA

 * JOINT TYPHOON WARNING CENTER IN HAWAII

 * U.S. COAST GUARD 11TH - 13TH - 17TH DISTRICT OFFICES

 * U.S. COAST GUARD KODIAK COMMSTA AND CAMSPAC POINT REYES CA

 * CANADIAN COAST GUARD MCTS COMOX AND/OR VICTORIA

 * FAA REGIONAL OPERATIONS CENTER IN SEATTLE

 * ALL PACIFIC COAST TSUNAMIREADY COMMUNITY WARNING POINTS.


RESPONSES SHOULD INCLUDE
------------------------
 * TIME-OF-RECEIPT
 * AGENCY NAME
 * EMAIL ADDRESS
 * PHONE NUMBER


WEATHER SERVICE OFFICES SHOULD RESPOND IN ACCORDANCE WITH LOCAL
DIRECTIVES. ALL OTHERS SHOULD REPLY BY ONE OF THE AVAILABLE METHODS
BELOW.  USE LOWER CASE FOR WEB SITE.


SEND RESPONSE BY
----------------
 * WEB - NTWC.ARH.NOAA.GOV/COMMTEST/INDEX.HTML
 * EMAIL ADDRESS - NTWC-AT SIGN-NOAA.GOV
 * AFTN ADDRESS  - PAAQYQYX
 * AWIPS         - TMA
 * FAX           - 907-745-6071

PZZ530-AKZ017>029-135-131-125-121-171-181-185-187-191-195-
BCZ130-230-250-260-280-160-142-141-150-121-122-220-210-922-
912-921-911-110-WAZ503-506>511-001-514>517-021-ORZ001-002-
021-022-CAZ039>043-087-034-035-530-006-506-508-509-529-505-
002-001-549-550-120156-
/T.NEW.PAAQ.TS.W.0033.160412T0056Z-160412T0156Z/
ALASKA/ BRITISH COLUMBIA/ WASHINGTON/ OREGON/ AND CALIFORNIA
COASTAL AREAS
556 PM PDT MON APR 11 2016

...THIS_MESSAGE_IS_FOR_TEST_PURPOSES_ONLY...

...THIS IS A TEST TO DETERMINE TRANSMISSION TIMES INVOLVED IN THE
   DISSEMINATION OF TSUNAMI INFORMATION...

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