

UNESCO Intergovernmental
Oceanographic Commission

Intergovernmental Coordination Group for the
Pacific Tsunami Warning and Mitigation
System

Exercise Pacific Wave 08

A Pacific-wide warning and communication exercise
21-23 October 2008

DRAFT

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Background

Most of the world's earthquakes and tsunamis occur in the Pacific Ocean and its marginal seas. On average, the Pacific is struck by a locally damaging tsunami every year or two, and by a major Pacific-wide tsunami a few times each century. In 1960 a magnitude 9.5 earthquake occurred off the coast of Chile. It generated a mostly un-warned tsunami that caused damage and casualties across the entire Pacific basin – even as far away as Japan. Following that event, UNESCO's Intergovernmental Oceanographic Commission (IOC) formed the International Coordination Group for the Tsunami Warning System in the Pacific (ICG/TWSP, also known as ITSU) to provide warnings for such events and to coordinate mitigation efforts among its Member States. At its Twenty-Second Session held during September 2005 in Guayaquil, Ecuador, the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS, the former ICG/TWSP) recommended that a Pacific-wide tsunami exercise be carried out in 2008 with results compiled and written before the next meeting of the ICG in February 2009.

The terrible impact of the 26 December 2004 Indonesia earthquake and Indian Ocean tsunami tragically demonstrated what can happen without an effective tsunami warning system. Tsunamis may not occur often, but when they do they can affect coasts across an entire ocean within minutes to hours. An efficient and effective warning system is needed that is ready to react 24 hours a day to any potential tsunami threat and that can then act quickly from end-to-end to alert those at risk along coasts and motivate them take immediate and appropriate steps to save their lives. A Pacific-wide tsunami exercise is an effective tool for evaluating the readiness of the PTWS and to identify changes that can improve its effectiveness. There not been a major Pacific tsunami in more than 40 years, but another will occur and the PTWS must be prepared. The first Pacific-wide exercise, "Exercise Pacific Wave 06", was carried out in May of 2006. This second exercise follows up on the first and helps establish such exercises as part of the routine work of maintaining the PTWS.

Exercise Aim

The purpose of the exercise is to evaluate and improve the effectiveness of the PTWS, its operational Tsunami Warning Centers, and its Member States in responding to a destructive tsunami. The exercise provides an opportunity for Pacific countries to exercise their operational lines of communications, review their tsunami response procedures, and to promote emergency preparedness. Every Pacific country is encouraged to participate.

The scenario will be a large tsunamigenic earthquake off the northeast coast of Japan that occurs at 00:00 UCT on Wednesday, October 22, 2008.

Exercise Objectives

From the scenario, each country can develop their own specific objectives for the exercise. The following are the overarching objectives of the exercise.

The intention is to practice the following:

1. Validate the international Tsunami Warning Centers dissemination process of issuing Tsunami Watch and Warning Bulletins to Pacific countries.
2. Validate the process of countries receiving and confirming Tsunami Bulletins through their designated focal points.
3. Validate dissemination of warning messages to relevant agencies within a country.
4. Validate the organizational decision making process about public warnings and evacuations.

And to:

5. Identify the methods that would be used to notify and instruct the public.
6. Assess the elapsed time until the public would be notified and instructed.

Exercise Style

The exercise will be carried out in a readiness style that aims to involve communication and decision making at Government levels, without disrupting or alarming the general public. Individual countries, however, may at their discretion elect to extend the exercise down to the level of actually notifying the public.

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, typhoon, earthquake, etc.) as a framework to conduct Exercise Pacific Wave 08.

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

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 VI for a Sample Tabletop Exercise Outline conducted for Thailand by the Pacific Disaster Center.
4. **Functional Exercise:** A Functional Exercise is a planned activity designed to enhance individual and organizational skills. It is also utilized to evaluate the capability of a community's emergency management system by testing the Emergency Operations Plan (EOP), with emphasis on the majority of emergency management functions. 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 time constraints. A Functional Exercise should have specific goals, objectives, and a 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.

Relative Time Frames

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 (National and International)

Actions in the Event of a Real Situation

All documentation and correspondence relating to this exercise is to be clearly identified as **Exercise Pacific Wave 08** and **For Exercise Purposes Only**. In the event of a real threat being identified the code word **NODUFF** will be used. This message will be given full priority and a decision will be made by the Exercise Director whether to pause or cease the exercise. Smaller earthquakes that only trigger a Tsunami Information Bulletin will not disrupt the exercise.

Resourcing

Although participating countries 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 requested that realistic resource levels be deployed in order to reflect some of the issues that are likely to be faced in a real event.

Media Arrangements

The UNESCO Bureau of Public Information will issue an international Media Advisory in late September or early October to alert the press of the 21-23 October "Exercise Pacific Wave 08." About one week before the exercise, UNESCO will issue a second press release with more details on the exercise.

ICG/PTWS Member States should consider issuing one or two exercise press releases to their respective country's media in conjunction with UNESCO releases. Member States' press releases will give adequate alert to their country's population and give their local media time to conduct interviews and

documentaries with participating exercise organizations in advance of the exercise.

A second Member State press release, one week before the exercise, would provide a more detailed description of exercise activities to take place within that country.

Appendix VII contains a sample press release that can be customized by Member States. The sample press release is provided in both English and Spanish.

Evaluation and Debriefing

All participating countries are asked to provide brief feedback on the exercise within four weeks of the exercise. This feedback will greatly assist in the evaluation of Exercise Pacific Wave 08 and assist in the development of subsequent exercises.

Evaluation Instruments

The goal of exercise evaluation is to validate strengths and identify opportunities for improvement within the participating organisations. This is to be accomplished by collating supporting data; analysing the data to compare effectiveness against requirements; and determining what changes need to be made by participating organisations as well as the PTWS as a collective to support effective tsunami warning and decision making.

Evaluation of this exercise will focus on the adequacy of plans, policies, procedures, assessment capabilities, communication, resources and inter-agency/inter-jurisdictional relationships that support effective tsunami warning and decision-making at all levels of government. Participants that choose to include additional objectives, for example by exercising public warning and/or response plans, can expand the evaluation instrument accordingly. The evaluation of such additional objectives will be for the use of the particular participant only and is not required for the integrated PTWS report.

The evaluation instrument aims to inform and facilitate individual participant country evaluations as well as the integrated PTWS Exercise Report.

Official Exercise Evaluation Forms addressing the respective focus areas and objectives are included in Appendix VI.

All participant countries are required to complete the official Exercise Evaluation Forms and return only those forms back to the Exercise Task Team within four weeks after the exercise. A formal exercise debrief inclusive of all participants in the respective countries will be required to facilitate a collective

and official evaluation. The method applied to collect the data required for consideration in the debrief is to be decided upon by the individual participant countries. It is recommended that independent and objective exercise evaluators/observers be appointed at all exercise points to support the collection of such data. Evaluators/observers are to be guided by the exercise objectives and the information required in the Exercise Evaluation Forms. A useful guide to debriefing is one used by New Zealand Civil Defence and Emergency Management. It can be found at:

[http://www.civildefence.govt.nz/memwebsite.nsf/Files/Information_Series/\\$file/DeBriefing%20Info%20Book.pdf](http://www.civildefence.govt.nz/memwebsite.nsf/Files/Information_Series/$file/DeBriefing%20Info%20Book.pdf)

In completing evaluation forms, participating organisations must have the ability to note areas for improvement and actions that they plan to take without concern that the information carries political or operational risks. Thus, all official Exercise Evaluation Forms are designated as "For Official Use Only" and will be restricted for use by the exercise Task Team for the sole purpose of compilation of the integrated PTWS Exercise Report. Some participant countries may however decide to share their individual evaluation outcomes with the public. While the PTWS Exercise Report will be submitted to the IOC, the decision to share the information contained in it with the public will be made by the ICG of the PTWS.

General Idea

For this exercise, following the recommendation from ICG/PTWS-XXII, there will be a single exercise scenario played out in real time. The scenario will be a major earthquake off the northeast coast of Japan that generates a destructive teletsunami affecting countries from Japan to Chile over the course of about 24 hours. Centers that will issue bulletins for this exercise will be the Pacific Tsunami Warning Center (PTWC) in Hawaii, the West Coast and Alaska Tsunami Warning Center (WC/ATWC) in Alaska, and the Northwest Pacific Tsunami Advisory Center (NWPTAC) in Japan. The timeline for issuance of bulletins is given in Table 1. WMO product identifiers for the bulletins are given in Table 2.

Participant countries may elect to exercise in their own timelines in order to achieve their particular objectives. For example, a particular country's exercise control may choose to feed the 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. All bulletins, provided in advance in Appendices I-V, will facilitate this approach.

Coverage

While an actual major tsunami generated off the northeast coast of Japan would likely only affect a subset of PTWS countries, all Member States are encouraged to participate and estimated tsunami arrival times to all PTWS countries are included in PTWC bulletins. In addition, countries are welcome to modify estimated arrival times or estimated wave amplitudes to suit their preference – for example, to have the tsunami arrive sooner and with a larger amplitude. Countries in the Pacific that are not Member States of the ICG/PTWS are also encouraged to participate and are covered by the scenario.

Messages

The initial bulletin will be issued by the NWPTAC because the earthquake is located in the immediate vicinity of Japan. Initial bulletins from PTWC and WC/ATWC will follow, initially using the earthquake parameters from the NWPTAC. To avoid any possible misinterpretation, bulletins issued by the warning centers will be in a “dummy” exercise message format (Appendix I) that will refer participants to a specific scenario bulletin number in this exercise manual (in Appendices II – IV). Dummy messages will be issued for each simulated real message at the beginning of the exercise, but only about every four hours thereafter until the simulated tsunami has crossed the entire Pacific and the exercise concludes. The schedule of bulletins is given in Table 1.

Special Ideas

The Scenario

The simulated tsunami will be generated by a magnitude 9.2 earthquake off the northeast coast of Japan at 40°N, 143°E that occurs on October 22, 2008 at 0000UTC. An earthquake of this size would be likely to generate a tsunami with widespread destructive effects. Bulletins will be issued for approximately 23 hours until the tsunami is simulated to have crossed the entire Pacific.

Master Schedule and Timings (Exercise Script)

Table 1: Scenario Timeline

Tsunami from magnitude 9.2 earthquake at 40°N, 143°E occurring on October 22, 2008 at 0000UTC.

Date (UTC)	Time (UTC)	NWPTAC Message			PTWC Message			WC/ATWC Message		
		#	Type	Dummy	#	Type	Dummy	#	Type	Dummy
10/22	0005	01	TAB	Yes						
10/22	0010				01	RWW	Yes	01	WWA	Yes
10/22	0040				02	RWW	Yes	02	WWA	Yes
10/22	0050	02	TAB	Yes						
10/22	0110							03	WWA	Yes
10/22	0140				03	PWW	Yes	04	WWA	Yes
10/22	0145	03	TAB	Yes						
10/22	0210							05	WWA	Yes
10/22	0240				04	PWW	Yes	06	WWA	Yes
10/22	0245	04	TAB	Yes						
10/22	0310							07	WWA	Yes
10/22	0340				05	PWW	Yes	08	WWA	Yes
10/22	0345	05	TAB	Yes						
10/22	0410							09	WWA	No
10/22	0440				06	PWW	No	10	WWA	No
10/22	0445	06	TAB	No						
10/22	0510							11	WWA	No
10/22	0540				07	PWW	No	12	WWA	No
10/22	0545	07	TAB	No						
10/22	0610							13	WWA	No
10/22	0640				08	PWW	No	14	WWA	No
10/22	0645	08	TAB	No						
10/22	0710							15	WWA	No
10/22	0740				09	PWW	Yes	16	WWA	Yes
10/22	0745	09	TAB	Yes						
10/22	0810							17	WWA	No
10/22	0840				10	PWW	No	18	WWA	No
10/22	0845	10	TAB	No						
10/22	0910							19	WWA	No
10/22	0940				11	PWW	No	20	WWA	No
10/22	0945	11	TAB	No						
10/22	1010							21	WWA	No
10/22	1040				12	PWW	No	22	WWA	No
10/22	1045	12	TAB	No						
10/22	1110							23	WWA	No
10/22	1140				13	PWW	Yes	24	WWA	Yes
10/22	1145	13	TAB	Yes						

10/22	1210							25	WWA	No
10/22	1240				14	PWW	No	26	WWA	No
10/22	1245	14	TAB	No						
10/22	1310							27	WWA	No
10/22	1340				15	PWW	No	28	WWA	No
10/22	1345	15	TAB	No						
10/22	1410							29	WWA	No
10/22	1440				16	PWW	No	30	WWA	No
10/22	1445	16	TAB	No						
10/22	1510							31	WWA	No
10/22	1540				17	PWW	Yes	32	WWA	Yes
10/22	1545	17	TAB	Yes						
10/22	1610							33	WWA	No
10/22	1640				18	PWW	No	34	WWA	No
10/22	1645	18	TAB	No						
10/22	1710							35	WWA	No
10/22	1740				19	PWW	No	36	WWA	No
10/22	1745	19	TAB	No						
10/22	1810							37	WWA	No
10/22	1840				20	PWW	No	38	WWA	No
10/22	1845	20	TAB	No						
10/22	1910							39	WWA	No
10/22	1940				21	PWW	Yes	40	WWA	Yes
10/22	1945	21	TAB	Yes						
10/22	2010							41	WWA	No
10/22	2040				22	PWW	No	42	WWA	No
10/22	2045	22	TAB	No						
10/22	2110							43	WWA	No
10/22	2140				23	PWW	No	44	WWA	No
10/22	2145	23	TAB	No						
10/22	2210							45	WWA	No
10/22	2240				24	PWW	No	46	WWA	No
10/22	2245	24	TAB	No						
10/22	2310							47	WWA	No
10/22	2340				25	FPW	Yes	48	MFS	Yes
10/22	2345	25	TAB	Yes						

NWPTAC Bulletin Type:

TAB Tsunami Advisory Bulletin

PTWC Bulletin Types:

RWW Regional Warning Watch

PWW Pacific-Wide Warning

FPW Final Pacific-Wide Warning

WC/ATWC Bulletin Types:

TAB Tsunami Advisory Bulletin

WWA Warning Watch Advisory

MFS Major Wave Final Supplement

Dummy:

Yes Dummy Issued

No Dummy Not Issued

Table 2: Product Types

Product Types Issued for Dummy Exercise Bulletins

Center	WMO Product ID	AFTN	EMWIN	Fax	Email
NWPTAC	WEPA40 RJTD	No	No	Yes	Yes
PTWC	WEPA40 PHEB	Yes	Yes	Yes	Yes
WC/ATWC	WEPA41 PAAQ	Yes	Yes	Yes	Yes
	WEAK51 PAAQ	Yes	Yes	Yes	Yes

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APPENDIX I. SAMPLE DUMMY EXERCISE MESSAGES

PTWC Sample Dummy Exercise Message

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 006...TEST
 PACIFIC TSUNAMI WARNING CENTER
 0440 UTC 22 OCT 2008

TO: PARTICIPANTS OF PACIFIC WAVE 08 TSUNAMI EXERCISE.
 ALL OTHERS PLEASE IGNORE.

SUBJECT: EXERCISE PACIFIC WAVE 08
 REFER TO PTWC BULLETIN 6 IN EXERCISE MANUAL

THIS MESSAGE IS ONE OF A SERIES OF MESSAGES THAT ARE BEING ISSUED AS PART OF THE PACIFIC WAVE 08 TSUNAMI EXERCISE. THE EXERCISE IS TO TEST COMMUNICATIONS AND ACTIONS THAT WOULD BE NEEDED IN THE EVENT OF AN ACTUAL TSUNAMI.

PARTICIPANTS IN THE EXERCISE SHOULD REFER TO THE PACIFIC WAVE 08 EXERCISE MANUAL FOR THE CORRESPONDING PTWC BULLETIN 6

THIS IS ONLY AN EXERCISE.

WC/ATWC Sample Dummy Exercise Message

TEST...TSUNAMI EXERCISE MESSAGE NUMBER 6...TEST
 NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
 0145 PM PDT TUE MAY 16 2008

...PACIFIC WAVE 08 TSUNAMI EXERCISE MESSAGE. REFER TO WC/ATWC BULLETIN 6 IN THE EXERCISE MANUAL. THIS IS AN EXERCISE ONLY...

THIS MESSAGE IS ONE OF A SERIES OF MESSAGES THAT ARE BEING ISSUED AS PART OF THE PACIFIC WAVE 08 TSUNAMI EXERCISE. THE EXERCISE IS TO TEST COMMUNICATIONS AND ACTIONS THAT WOULD BE NEEDED IN THE EVENT OF AN ACTUAL TSUNAMI.

PARTICIPANTS IN THE EXERCISE SHOULD REFER TO THE PACIFIC WAVE 08 EXERCISE MANUAL. SCENARIO 1 - WC/ATWC BULLETIN 12

THIS IS ONLY AN EXERCISE.

NWPTAC Sample Dummy Exercise Message

TSUNAMI EXERCISE MESSAGE NUMBER 001
 ISSUED BY NWPTAC (JMA)
 ISSUED AT 0005Z 22 OCT 2008

TO: PARTICIPANTS OF PACIFIC WAVE 08 TSUNAMI EXERCISE.
 ALL OTHERS PLEASE IGNORE.

SUBJECT: EXERCISE PACIFIC WAVE 08
 REFER TO NWPTAC BULLETIN 1 IN EXERCISE MANUAL

THIS MESSAGE IS ONE OF A SERIES OF MESSAGES THAT ARE BEING ISSUED AS PART OF THE PACIFIC WAVE 08 TSUNAMI EXERCISE. THE EXERCISE IS

TO TEST COMMUNICATIONS AND ACTIONS THAT WOULD BE NEEDED IN THE
EVENT OF AN ACTUAL TSUNAMI.

PARTICIPANTS IN THE EXERCISE SHOULD REFER TO THE PACIFIC WAVE 08
EXERCISE MANUAL FOR THE CORRESPONDING NWPTAC BULLETIN 1

THIS IS ONLY AN EXERCISE.

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APPENDIX II. PTWC REFERENCE MESSAGES

The following messages are representative of what might be issued by the Pacific Tsunami Warning Center during an actual large tsunami event originating in the northwest Pacific off of Japan.

PTWC BULLETIN 1.

(to be inserted)

PTWC BULLETIN 2.

(to be inserted)

PTWC BULLETIN 3.

(to be inserted)

PTWC BULLETIN 4.

(to be inserted)

PTWC BULLETIN 5.

(to be inserted)

PTWC BULLETIN 9.

(to be inserted)

PTWC BULLETIN 13.

(to be inserted)

PTWC BULLETIN 17.

(to be inserted)

PTWC BULLETIN 21.

(to be inserted)

PTWC BULLETIN 25.

(to be inserted)

APPENDIX III. WC/ATWC REFERENCE MESSAGES

The following messages are representative of what would be issued by the West Coast and Alaska Tsunami Warning Center during an actual large tsunami event originating in the northwest Pacific off of Japan.

WC/ATWC BULLETIN 1.

(to be inserted)

WC/ATWC BULLETIN 2.

(to be inserted)

WC/ATWC BULLETIN 3.

(to be inserted)

WC/ATWC BULLETIN 4.

(to be inserted)

WC/ATWC BULLETIN 5.

(to be inserted)

WC/ATWC BULLETIN 6.

(to be inserted)

WC/ATWC BULLETIN 7.

(to be inserted)

WC/ATWC BULLETIN 8.

(to be inserted)

WC/ATWC BULLETIN 16.

(to be inserted)

WC/ATWC BULLETIN 24.

(to be inserted)

WC/ATWC BULLETIN 32.

(to be inserted)

WC/ATWC BULLETIN 40.

(to be inserted)

WC/ATWC BULLETIN 48.

(to be inserted)

APPENDIX IV. NWPTAC REFERENCE MESSAGES

The following messages are representative of what would be issued by the Northwest Pacific Tsunami Advisory Center during an actual large tsunami event originating in the northwest Pacific off of Japan.

NWPTAC BULLETIN 1.

(to be inserted)

NWPTAC BULLETIN 2.

(to be inserted)

NWPTAC BULLETIN 3.

(to be inserted)

NWPTAC BULLETIN 4.

(to be inserted)

NWPTAC BULLETIN 5.

(to be inserted)

NWPTAC BULLETIN 6.

(to be inserted)

NWPTAC BULLETIN 7.

(to be inserted)

NWPTAC BULLETIN 8.

(to be inserted)

NWPTAC BULLETIN 13.

(to be inserted)

NWPTAC BULLETIN 17.

(to be inserted)

NWPTAC BULLETIN 21.

(to be inserted)

NWPTAC BULLETIN 25.

(to be inserted)

APPENDIX V. EXAMPLE OF TABLETOP EXERCISE

Risk Reduction Strategies to Improve Tsunami Response Planning - A Tabletop Exercise for Thailand (3 hrs.)

Stanley Goosby, Pacific Disaster Center, May 2005

A recent Tsunami scenario will be presented to generate discussion of direct and indirect impacts upon coastal communities. Participants will be encouraged to share challenges, successes, and lessons learned in responding to tsunamis, and to explore short- and long-term actions to improve warning processes. Facilitated discussions and group activities will focus on meeting informational needs and communicating disaster risk through the use of available tools, applications, and information resources, and how these may contribute to the development of effective early warning-risk management strategies.

Exercise Objectives

1. Increase understanding of the tsunami hazard and its impacts on coastal environment.
2. Exercise existing procedures and processes related to Early tsunami warnings
3. Identify critical decision points, resources, and informational needs, as well as Gaps.
4. Review of communicate protocol for warning.
5. Review procedures and protocols for issuing “All Clear”.

Exercise Outline

Setting the Stage

- Background on Tsunamis (general characteristics, associated hazards, warning)
- Tsunami video clip, narrative, images, maps
- Hazard Information and Warning Centers (PTWC, JMA, NEIC, USGS)

Risk Analysis #1

- Know your hazard(s) (Understanding risk, frequency, intensity, impacts, and vulnerabilities; regional maps; taking appropriate actions for planning and preparedness)
- Review Hazard Analysis Worksheet (4-13)

Exercise Introduction

- Divide into groups
- Introduction – Earthquake to Tsunami Generation to Tsunami Impacts

Exercise Phase 1

- Earthquake of magnitude 8.3 have occurred 75 miles (120 kilometers) off of coast of Sumatra.
- People in high rise buildings in Bangkok are experience and reporting buildings shaking, (additional information)
- USGS issues bulletin (review bulletin, maps, other related information)
- Group work, report out.

Break – 15 minutes

Exercise Phase 2 - Tsunami Watch Issued

- Warning Agencies (PTWC and JMA) have issued a Tsunami Watch for coastal areas within 3 - 6 hours arrival time of the Tsunami.
- What actions are taking (government agencies, media, and public)
- Group work, report out.

Exercise Phase 3 - Tsunami Warning Issued

- Warning Agencies (PTWC and JMA) have issued a Tsunami Watch for coastal areas within 3 hours arrival time of the Tsunami.
- What actions are taking (government agencies, media, and public)
- Group work, report out.

Exercise Phase 4 - Tsunami impact and Situation Assessment

- Resources for damage assessment
- Deployment of disaster relief
- Managing the information requests and requirements (government agencies, media, and public)
- Monitoring Aftershocks for potential tsunami generation
- Group work, report out.

Concluding Discussion

- **What are the gaps - critical decision points, information and resource needs?**
- **How do you communicate to impacted areas?**
- **Who issues the “All Clear” and how is it communicated?**
- **Outline strategies for filling the gaps**

Materials:

- Hazard Analysis Worksheet (4-13)
- Maps (Hazard, Base, and Tsunami Time)
- Large post-it paper
- Felt pens
- Laptop, projector, screen

APPENDIX VI. SAMPLE PRESS RELEASE

TEMPLATE FOR NEWS RELEASE

USE AGENCY MASTHEAD

Contact: (insert name)
 (insert phone number)
 (insert email address)

FOR IMMEDIATE RELEASE
 (insert date)

PACIFIC-WIDE TSUNAMI DRILL SET FOR OCTOBER

(insert country name) will join over (insert number) other countries around the Pacific Rim as a participant in a mock tsunami scenario during 21 – 23 October 2008. The purpose of this Pacific-wide exercise is to increase preparedness, evaluate response capabilities in each country and improve coordination throughout the region.

“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 Pacific Tsunami Warning System and help identify operational strengths and weaknesses in each country.”

The exercise, titled Pacific Wave 08, will simulate Pacific countries being put into a Tsunami Warning situation requiring government decision-making. It is the second such exercise with the first having been carried out in May 2006. The role-playing of the exercise will be taken to the step just prior to public notification.

The exercise can be divided into two stages. In the first stage, a destructive tsunami crossing the Pacific from an earthquake near Japan will be simulated by international notifications from Japan’s Northwest Pacific Tsunami Advisory Center (NWPTAC), the U.S. Pacific Tsunami Warning Center (PTWC) and the U.S. West Coast and Alaska Tsunami Warning Center (WC/ATWC). Bulletins will be transmitted from these tsunami warning centers to focal points designated by each country that are responsible for that country’s tsunami response.

In the second stage, conducted simultaneously in response to receipt of the international messages and any national tsunami detection, analysis, and forecasting capabilities, government officials will simulate decision-making and alerting procedures down to the last step before public notification. Notification of emergency management and response authorities for a single coastal community will be used as a measure of the end-to-end process of the entire country for purposes of this exercise. Due care will be taken to ensure the public is not inadvertently alarmed.

Insert paragraph tailored for specific country. Could identify participating agencies and specific plans. Could describe current early warning program, past evacuation drills (if any), ongoing mitigation and public education programs, etc. Could describe tsunami threat, history of tsunami hazards, if any.

Should any actual tsunami threat occur during the time period of the exercise, 21-23 October 2008, the drill will be terminated.

Following the exercise, a review and evaluation will be conducted by all participants. “We see this exercise as an essential element in the routine maintenance of the Pacific Tsunami Warning and Mitigation System,” said (insert name of appropriate official). “Our goal is to ensure a timely and effective early warning of tsunamis, educate communities at risk about safety preparedness, and improve our overall coordination. We will evaluate what works well, where improvements are needed, make necessary changes, and continue to practice.”

The exercise is sponsored by UNESCO’s Intergovernmental Oceanographic Commission through its Intergovernmental Coordination Group of the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), comprised of 28 Member States.

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On the Web:

Media Resources: insert new ITIC media page

Pacific Tsunami Warning System: <http://www.tsunamiwave.info/>

Pacific Tsunami Warning Center: <http://www.prh.noaa.gov/ptwc/>

Insert country URLs

APPENDIX VII. POST EXERCISE EVALUTION

EXERCISE OBJECTIVES

There are six core exercise objectives of the exercise:

1. Validate the Tsunami Warning Centers' dissemination process of issuing Tsunami Watch and Warning Bulletins to Pacific Basin countries.
2. Validate the process for countries to receive and confirm Tsunami Bulletins.
3. Validate dissemination of warning messages to relevant Agencies within a country, provinces and local jurisdictions.
4. Validate the organizational decision making process about public warnings and evacuations.
5. Identify the modes that would be employed to notify and instruct the public.
6. Assess the elapsed time until public would be notified and instructed.

EXERCISE SUCCESS CRITERIA

The exercise will be a success when:

- The core objectives above were exercised, performance evaluated and reported upon.
- The dynamics between the Tsunami Warning Centers, national tsunami focal points and information dissemination points within countries at the onset of a local, regional or distant source tsunami event are illustrated and understood. Local / regional / distant tsunamis are generated within 100 / 1000 / beyond 1000 kilometers respectively of an earthquake source. The nature of a local, regional, or distant source tsunami event and related information available (warning stage) are illustrated and understood.
- Areas where aspects of warnings for a local, regional, or distant source tsunami event can be improved are identified, both for tsunami warning centres and individual countries.
- It supports the establishment or review of planning for response to tsunamis at national and regional/local levels.

EVALUATING PARTICIPANT PERFORMANCE

Evaluation is based on:

- (a) Reporting on each of the core objectives described above.
- (b) Specific measurable sub-objectives for some of the core objectives.

Participants must fill in all reports and score each sub-objective, fill in detail where requested and make any comments in the spaces provided on the attached forms.

Separate forms are designed and marked for:

- Tsunami Warning Centers- PTWC, WC/ATWC, NWPTAC (only Objective 1).
- National decision making/dissemination points within countries (Objectives 1-6).
- Individual response agencies and/or provinces/local jurisdictions within countries. These are the recipients of warnings disseminated from the national decision making/dissemination points (Objectives 3-6).
- All participants within countries (Objectives 3-6).
-

Fill in only those forms that are relevant to your particular circumstances.

The score rating for sub-objectives is as follows:

Rating	Definition
1	Did not meet the objective (state why not)
2	Met some of the objective (state what part was not met)
3	Met the objective
4	Exceeded the objective (state how)

EVALUATION FORMS

The following pages contain the exercise evaluation forms to be filled out by the appropriate organizations after the exercise and returned within four weeks to:

Exercise Pacific Wave 08 Post Evaluation Coordinator
(to be determined)

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
National Decision Making Points and National Focal
Points**

Participant Country: _____

Participant Agency/Authority: _____

Exercise Planning and Conduct

The exercise planning, conduct, format, and style were satisfactory.

Circle/Highlight score: 1 2 3 4

Notes for (1/2/4):

Remarks/suggestions

EXERCISE PACIFIC WAVE 08 EVALUATION FORM
Tsunami Warning Centers- PTWC, WC/ATWC, NWPTAC

Tsunami Warning Center: _____

Objective 1: Validate the Tsunami Warning Centers' dissemination process of issuing Tsunami Watch and Warning Bulletins.

Tsunami Warning Center Report

First Bulletin Issued

1. Time that first bulletin was issued to national focal points (use 24hr clock and UTC, e.g. 14:35 UTC):
2. Method(s) of delivery to national focal points (e.g. fax, email, SMS, other systems- specify):
3. Number of failed deliveries (as shown by delivery systems):
4. Reasons for failed deliveries:
5. Alternate action taken to reach national focal points where failures occurred:
6. Time that the process of confirmations of receipt of message was completed (use 24hr clock and UTC, e.g. 14:35 UTC):
7. Number of non-confirmations:

Pacific Wide Warning Issued

1. Time that Pacific wide warning was passed to national focal points (use 24hr clock and UTC, e.g. 14:35 UTC):
2. Method(s) of delivery to national focal points (e.g. fax, email, SMS, other systems- specify):
3. Number of failed deliveries (as shown by delivery systems):
4. Reasons for failed deliveries:
5. Alternate action taken to reach national focal points where failures occurred:
6. Time that the process of confirmations of receipt of message was completed (use 24hr clock and UTC, e.g. 14:35 UTC):
7. Number of non-confirmations:

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
National Decision Making & Dissemination Points**

Participant Country:_____

Participant Agency/Authority:_____

Objective 1: Validate the Tsunami Warning Centers' dissemination process of issuing Tsunami Watch and Warning Bulletins to Pacific basin Countries.

Objective 1 (a): Judged against the nature of this event, information issued by the relevant Tsunami Warning Center(s) was timely:

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
National Decision Making & Dissemination Points**

Participant Country:_____

Participant Agency/Authority:_____

Objective 1: Validate the Tsunami Warning Centers' dissemination process of issuing Tsunami Watch and Warning Bulletins to Pacific basin Countries.

Objective 1 (b): The method(s) used by the Tsunami Warning Center(s) to send bulletins to us were appropriate.

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions

DRAFT

EXERCISE PACIFIC WAVE 08 EVALUATION FORM
National Decision Making & Dissemination Points

Participant Country: _____

Participant Agency/Authority: _____

Objective 2: Validate the process for countries to receive and confirm Tsunami Bulletins.

National Report: Receipt of Warning from Tsunami Warning Centers

National Focal Point

1. Time of receipt of Warning by our national focal point from: (use 24hr clock and UTC, e.g. 14:35 UTC)

PTWC:

WC/ATWC:

NWPTAC:

2. Method of receipt by national focal point (e.g. fax, email, SMS, phone):

Confirmation

1. Time of confirmation of receipt of warning back to Tsunami Warning Center(s): (use 24hr clock and UTC, e.g. 14:35 UTC)
2. Method of confirmation (phone/fax/email):

National Decision-making & Dissemination Point (if different to the National Focal Point)

1. Time of passing the information to the national decision-making & dissemination point (use 24hr clock and UTC, e.g. 14:35 UTC):
2. Method of passing the information to the national decision-making & dissemination point e.g. fax, email, SMS, radio, phone:

EXERCISE PACIFIC WAVE 08 EVALUATION FORM National Decision Making & Dissemination Points

Participant Country: _____

Participant Agency/Authority: _____

Objective 3: Validate dissemination of the warning message to relevant agencies within a country, provinces and local jurisdictions.

National Report: Dissemination of Warning

Dissemination Points

1. The warning was disseminated to: (tick as appropriate)

Emergency Services	
Other national government agencies	
Science agencies/universities for assessment	
Local government: provincial/regional level	
Local government: city/district level	

Delivery

1. Time of sending of warning to the above (use 24hr clock and UTC, e.g. 14:35 UTC):
2. Method(s) of delivery to our agencies/provinces/local jurisdictions (e.g. fax, email, SMS, radio, group voice message by phone, individual phone calls):
3. Number of failed deliveries (as shown by delivery systems):
4. Reasons for failed deliveries:
5. Alternate action taken to reach recipients where failures occurred:

Confirmations

1. Method(s) of confirming receipt of message by our agencies/provinces/local jurisdictions (e.g. fax, email, SMS, radio, phone, automated):
2. Time that the process of confirmations of receipt of message was completed (use 24hr clock and UTC, e.g. 14:35 UTC):
3. Number of non-confirmations:
4. Reasons for non-confirmation:

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
Individual Response Agencies and Provinces/Local
Jurisdictions**

Participant Country: _____

Participant Agency/Authority: _____

Objective 3: Validate dissemination of the warning message to relevant agencies within a country, provinces and local jurisdictions.

Objective 3 (a): Judged against the nature of this event, information issued by our national decision-making and dissemination point was timely:

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
Individual Response Agencies and Provinces/Local
Jurisdictions**

Participant Country: _____

Participant Agency/Authority: _____

Objective 3: Validate dissemination of the warning message to relevant agencies within a country, provinces and local jurisdictions.

Objective 3 (b): The method of communication from our national decision-making and dissemination point to us was sufficient to support decision-making.

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
National Decision Making & Dissemination Points**

Participant Country:_____

Participant Agency/Authority:_____

Objective 4: Validate dissemination of the warning message to relevant agencies within a country, provinces and local jurisdictions.

Objective 4 (a): The method of communication between our national decision-making and dissemination point and individual response agencies and provinces/local jurisdictions was sufficient to support our national information requirements.

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
All Participants within Countries**

Participant Country: _____

Participant Agency/Authority: _____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (b): Arrangements to assemble our management group relevant to decision-making on tsunami warning and response were in place before the exercise.

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
All Participants within Countries**

Participant Country:_____

Participant Agency/Authority:_____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (c): Our management group relevant to decision-making on tsunami warning & response was assembled within ____ minutes (fill in) after receiving the first warning. This was timely to facilitate good decision-making.

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
Individual Response Agencies and Provinces/Local
Jurisdictions**

Participant Country: _____

Participant Agency/Authority: _____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (d): The quality of the information issued by our national decision-making and dissemination point was sufficient to support local level decision-making:

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
National Decision Making & Dissemination Points**

Participant Country: _____

Participant Agency/Authority: _____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (e): The quality of the information received back from our response agencies and local level government were sufficient to support national level decision-making:

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
National Decision Making & Dissemination Points**

Participant Country:_____

Participant Agency/Authority:_____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (f): Sufficient national information was available to support national level decision-making (PTWC, WC/ATWC, NWPTAC information, country-generated scientific assessments, national considerations etc).

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
Provinces/Local Jurisdictions**

Participant Country:_____

Participant Agency/Authority:_____

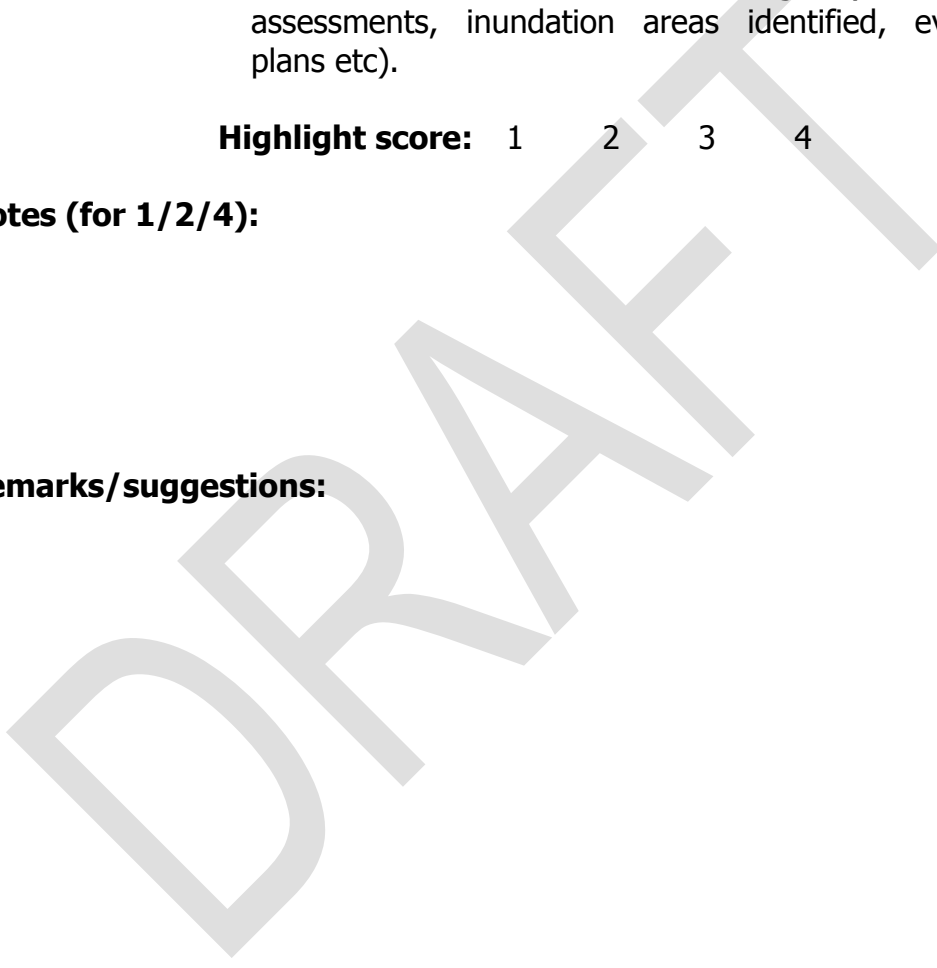
Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (g): Sufficient local information was available to support our assessment and decision-making (local hazard assessments, inundation areas identified, evacuation plans etc).

Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:



**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
All Participants within Countries**

Participant Country:_____

Participant Agency/Authority:_____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (h): We were able to make decisions about appropriate warnings and response

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
All Participants within Countries**

Participant Country:_____

Participant Agency/Authority:_____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (i): Decision-making was based on pre-existing plans for an event of this nature.

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
All Participants within Countries**

Participant Country:_____

Participant Agency/Authority:_____

Objective 4: Validate the organizational decision making process about public warnings and evacuations

Objective 4 (j): The exercise contributed to the improvement or the development of planning related to public warnings and other response activities required for an event of this nature.

Circle/Highlight score: 1 2 3 4

Notes (for 1/2/4):

Remarks/suggestions:

DRAFT

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
All Participants within Countries**

Participant Country: _____

Participant Agency/Authority: _____

Objective 5: Identify the modes that would be employed to notify and instruct the public.

Report

As part of our decision-making during this exercise we have determined to use the following means of public notification and instruction in a real event of this kind:

Method	Yes/No	Arrangements Exist (yes/no)
Public radio broadcasts		
TV announcements/teletext		
Public announcement systems		
Cell broadcast		
SMS (cell)		
Public call centre		
Website		
Telephone		
Sirens		
Door to door announcements		
Other (specify)		

**EXERCISE PACIFIC WAVE 08 EVALUATION FORM
All Participants within Countries**

Participant Country: _____

Participant Agency/Authority: _____

Objective 6: Assess the elapsed time until the public would be notified and instructed.

Report

The following times applied to us:

Activity	Elapsed Time (e.g. 1hr 15mins)
Making a decision on public warning (From time of receipt of warning)	
Formulation/compilation of public notification (From time of decision)	
Activation of public notification systems (From time of notification formulated)	
Total Time	