



Case Study of a Tsunami Warning Simulation Exercise from a Regional Perspective – “Lessons Learned from Each Event – Real or Hoax”

**TARNS 3rd Workshop February 6-8, 2007
Chonlapreuk Resort, Nakorn Nayok, Thailand**

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End-to-End Tsunami Early Warning System for Hawaii

- The Pacific Tsunami Warning Center (PTWC) and the Hawaii Civil Defense System serves as an example of an “End-To-End” Tsunami Warning and Mitigation System.
- An end to end system refers to the ability of the Tsunami Warning System to **detect** and **disseminate** tsunami information to the **emergency management community** and to **the public** for coastal evacuation as ordered by Civil Defense officials.

End-to-End Tsunami Early Warning System for Hawaii

- Hawaii State and County Civil Defense are Disaster Management Offices and by law, have the responsibility to **prepare for and respond to** natural and man-made technological emergencies and disasters.
- ***OUR GOAL: SAVE LIVES AND MINIMIZE DAMAGE FROM DISASTER***

PTWC KEY OPERATIONAL ACTIVITIES

- **SEISMIC DATA COLLECTION & ANALYSES**
- **SEA LEVEL MEASUREMENTS**
- **DECISION-MAKING PROCESSES**
- **MESSAGE CREATION & DISSEMINATION**



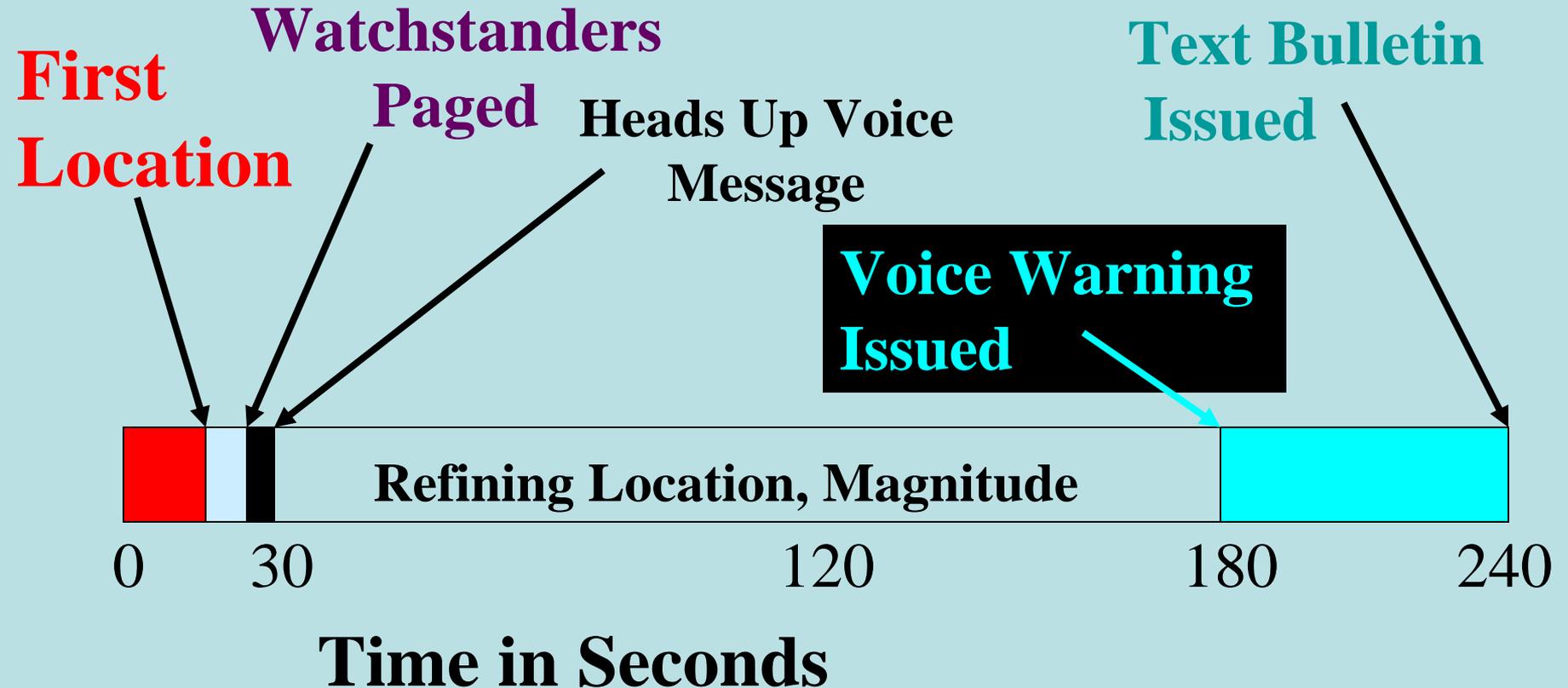
PTWC OPERATIONAL GOALS

- **FASTER**
- **MORE ACCURATE**
- **MORE RELIABLE**



Earthquake in Hawaii Region

Timeline to Issue Initial Warning Bulletin

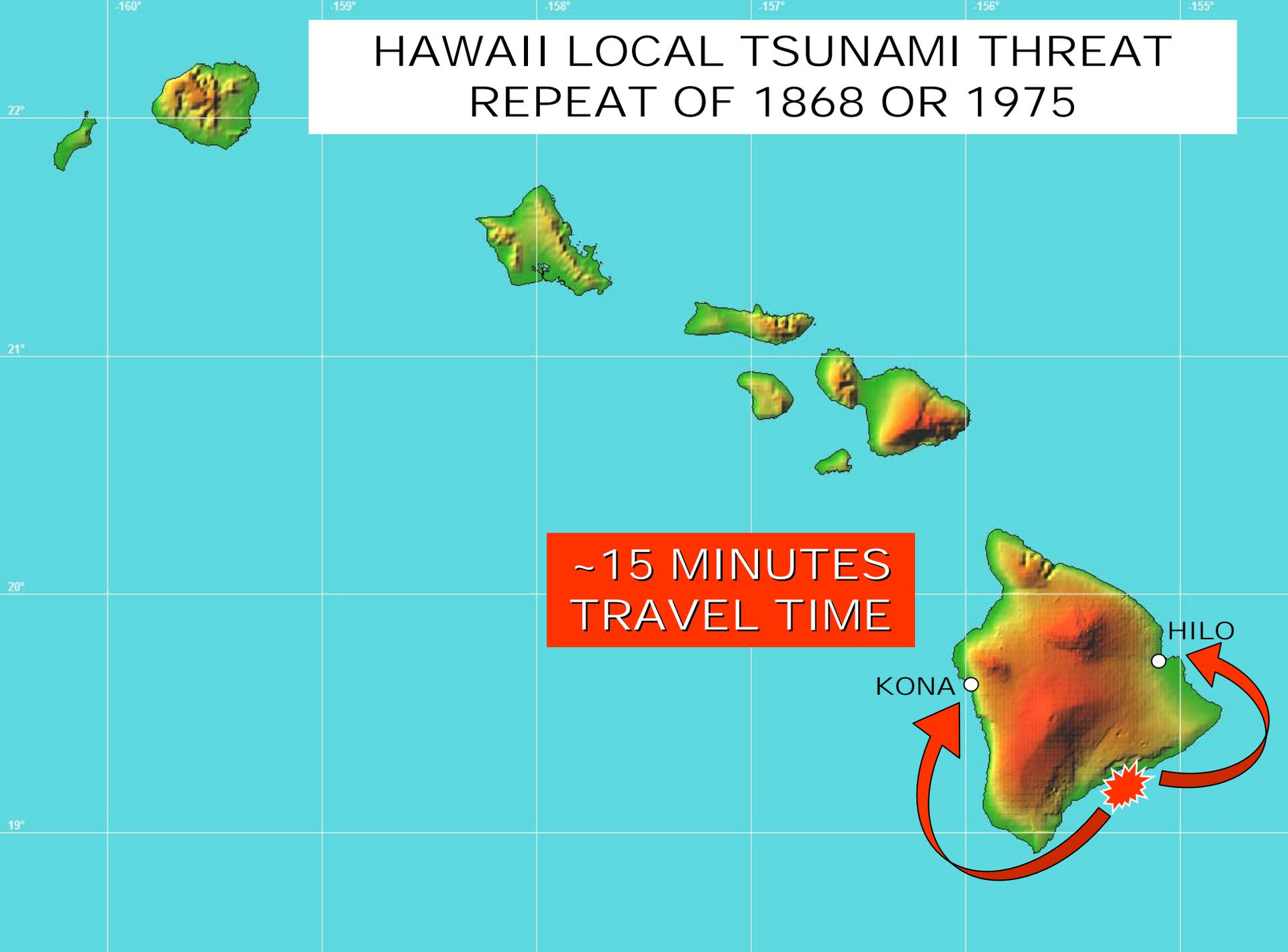


HAWAII LOCAL TSUNAMI THREAT REPEAT OF 1868 OR 1975

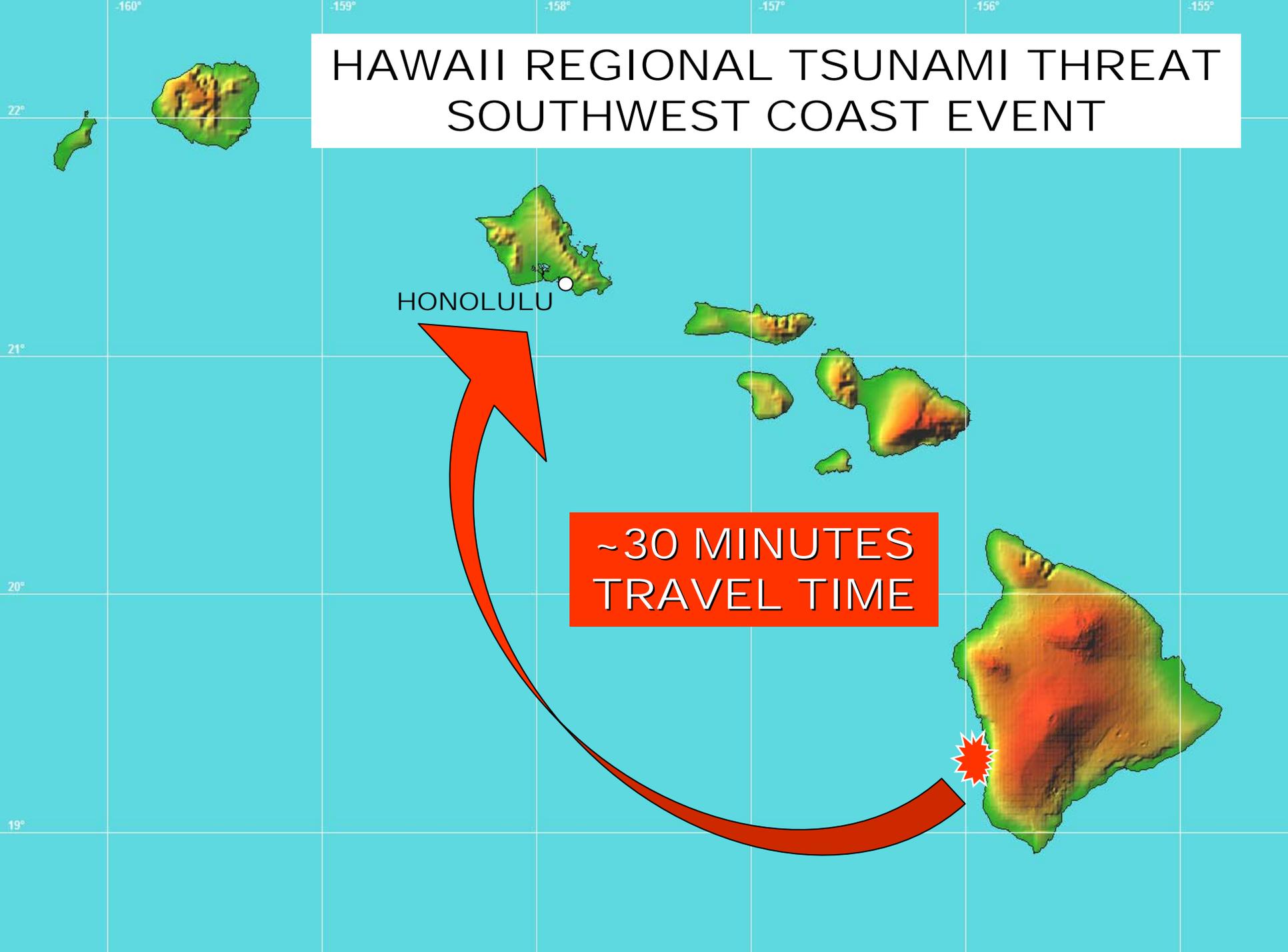
**~15 MINUTES
TRAVEL TIME**

KONA

HILO



HAWAII REGIONAL TSUNAMI THREAT SOUTHWEST COAST EVENT

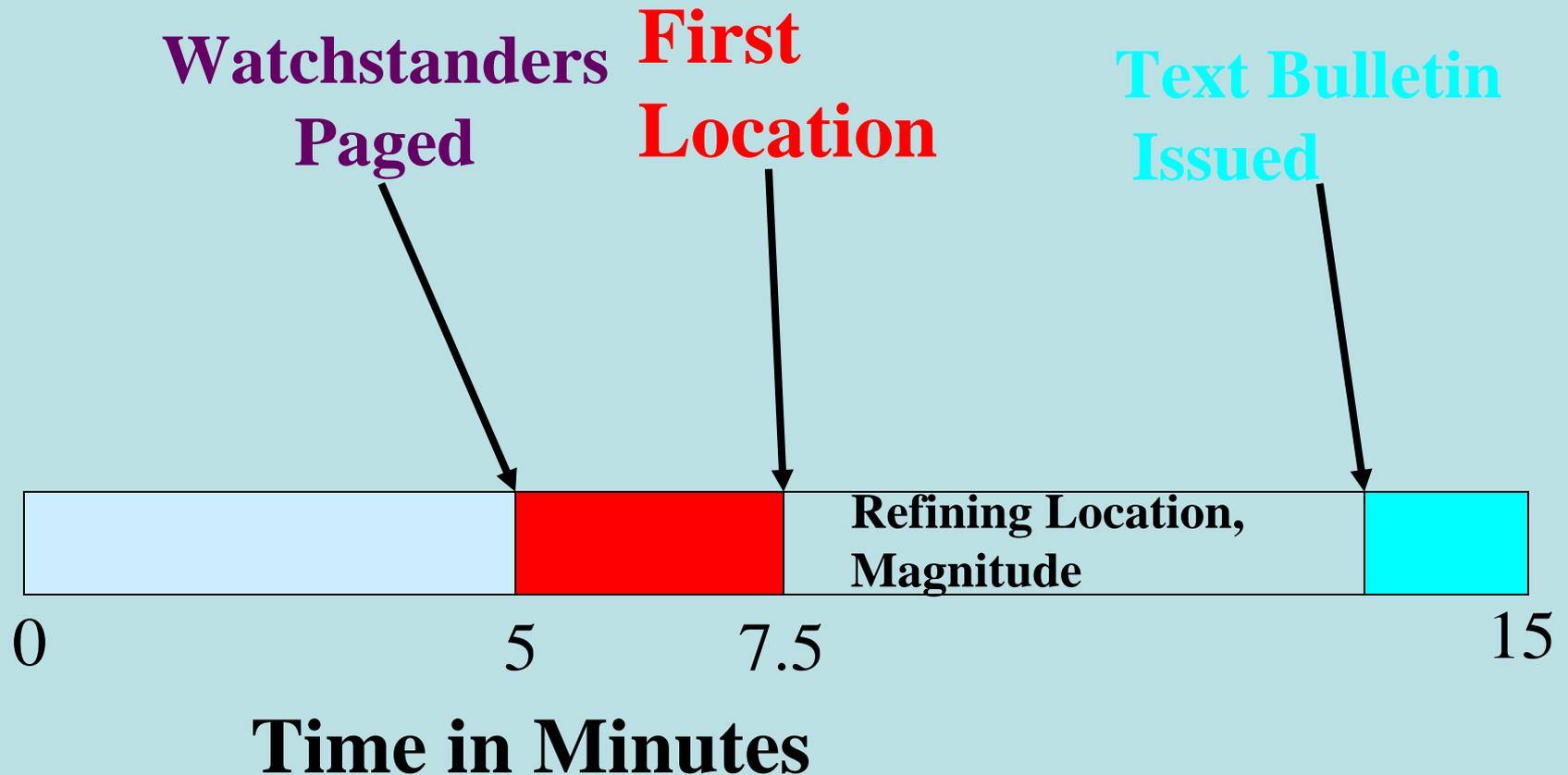


HONOLULU

~30 MINUTES
TRAVEL TIME

Earthquake Outside Hawaii Region

Timeline to Issue Initial Bulletin



PTWC Criteria for Bulletins in the Indian Ocean Region

| Earthquake Depth | Earthquake Location | Earthquake Magnitude (Mw) | Description of Tsunami Potential | Bulletin Type |
|-------------------------|----------------------------|----------------------------------|--|------------------------------|
| < 100 km | Under or very near the sea | 6.5 to 7.0 | Very small potential for a destructive local tsunami | Tsunami Information Bulletin |
| | | 7.1 to 7.5 | Potential for a destructive local tsunami | Local Tsunami Watch |
| | | 7.6 to 7.8 | Potential for a destructive regional tsunami | Regional Tsunami Watch |
| | | ≥ 7.9 | Potential for a destructive ocean-wide tsunami | Ocean-wide Tsunami Watch |
| | Inland | ≥ 6.5 | No tsunami potential | Tsunami Information Bulletin |
| ≥ 100 km | All Locations | ≥ 6.5 | No tsunami potential | Tsunami Information Bulletin |

Need To Test Standard Operating Procedures (SOPs) for Hoaxes

- Hoaxes about eminent earthquakes and/or tsunamis are spread easily through the Internet, SMS text messages, and through word of mouth.
- Tsunami Warning Centers and emergency management officials need defined procedures for putting out clarifying information from official sources.

Hoax Swamped Hawaii on Sunday, November 26, 2006

- An earthquake hoax occurred in Hawaii on Sunday, November 26, 2006, starting ~ 8am.
- Spread all day across Hawaii , warning that a large earthquake and destructive tsunami was going to strike the Big Island of Hawaii around midnight that night.

Hoax Swamped Hawaii on Sunday, November 26, 2006

- 4-6pm – Over 800 telephone calls went to NOAA and Civil Defense offices
- By 7-8pm, official messages were finally sent out to the public and the media informing there was no current earthquake or tsunami threat. **Calls came in from the U.S. mainland also.**

- Updated at 12:16 p.m., Monday, November 27, 2006
- **Unfounded quake, tsunami rumor postpones siren test**
- A test of a Civil Defense siren scheduled for this morning at Waimanalo Beach Park has been **postponed** because of unfounded rumors of an impending earthquake and subsequent tsunami, state Civil Defense officials said today.



- **Posted on: Tuesday, November 28, 2006**
- **Origin of earthquake, tsunami hoax probed**
- KANE'OHE — State and city officials are trying to determine the source of an earthquake and tsunami hoax on Sunday that sent hundreds of people to higher ground and tied up emergency communication lines for hours.
- Civil defense, police, Pacific Tsunami Warning Center and media were inundated Sunday with more than 800 calls from people trying to verify rumors that predicted a Big Island earthquake that would cause a major tsunami, supposedly due to hit the Islands Sunday night.
- Officials scrambled to squelch the rumor, but it persisted for hours as people rushed to fill gasoline tanks, purchased emergency supplies and sought refuge today.

Exercise Pacific Wave 2006

- Aim: To exercise the lines of communication within the Pacific Tsunami Warning Systems Area of Responsibility
- Confirm the process to receive and confirm tsunami warning messages.
- Confirm dissemination of warning messages to relevant agencies/jurisdictions and evaluate the decision making process about public warnings and evacuations.

Exercise Pacific Wave 2006

- Exercise conducted May 16/17, 2006
- Provided scenarios for countries to choose from to test their systems' responsiveness in the case of a trans-Pacific tsunami
- 5 of 40 countries participating chose to include the public and perform evacuation drills (French Polynesia, American Samoa, Malaysia, Thailand, and the Philippines).
- Many lessons learned.

October 15, 2006 Local Earthquake – No Tsunami

- A 6.5 MWP earthquake struck the Kona coast off the Big Island that caused major damage there and less to Maui.
- Oahu lost power 10 minutes after the earthquake, severely hampering normal and emergency communications. Many radio and television stations, and some cell phone towers did not operate because of no backup power.
- Power restored 12-16 hours later. State Civil Defense and PTWC have changed procedures to insure the public is aware of earthquake information well below the threshold that would generate a tsunami.



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