June 14th 2005 Tsunami Warning
Lessons Learned

George Crawford, Washington Emergency Management Division
Lesson # 1
Multiple communication paths must be available

- Multiple lines added to NOAA Weather Radio Network
- Lines alarmed
- Tsunami Message sent statewide instead of affected jurisdictions only
- Increase the number of All Hazard Alert Broadcasting (AHAB) Radios on the coast
  - ✓ Interoperability - system on satellite control
FUNDED SYSTEMS TO BE INSTALLED BY JUNE 2007 (32)

- Bay Center
- Cape Disappointment
- Clallam Bay
- Cohasset Beach
- Copalis Beach
- Diamond Point
- Fort Worden
- Grayland (2)
- Hoquiam
- Ilwaco
- Long Beach
- Lower Elwha
- Lummi Nation (2)
- Pacific Beach
- Pacific Park
- Point Hudson
- Port Angeles
- Ocean City
- Ocean Park (4)
- Ocean Shores (3)
- Seaview
- Surfside
- Taholah
- Tokeland
- Westport

OPERATIONAL (16)

- Aberdeen
- La Push
- McAlder
- McMillin
- Neah Bay
- Ocean Shores
- Orting
- Port Townsend
- Puyallup (2)
- Sandy Point
- Seattle (3)
- Sumner
- Westport

Washington State All-Hazard Alert Broadcasting (AHAB) Network
Federal Signal / State of Washington Satellite-Based AHAB (All Hazard Alert Broadcast system)
Lesson # 2
Media must be part of the tsunami warning process

- Educate Broadcasters on the hazard
- Provide outline of process
- Provide sample messages
- Provide list of local experts
- Provide evacuation maps
- Provide “B Roll” that they can air
Lesson # 3
Decisions on tsunami warning/cancellation must be based on tsunami data and not seismic models

- Tsunami Warning Center must be sole authority for Tsunami Warning/Cancellation
  - Seismic Networks reports only on the earthquake not tsunami
- Tsunami Warning Center needs to update tsunami status faster
- DART Buoys need to be closer to source and extra DARTs added to Cascadia
- Upgrade tide gages to automate reporting

Real Time Detection of November 17, 2003 Tsunami
Lesson # 4

All levels of government must come together in a unified response.

Tsunami Warning Flow Chart

**How the Tsunami Warning System Works**

- **West Coast / Alaska Tsunami Warning Center** (Palmer, Alaska)
- **NWS** sends Tsunami EAS Message
- **State EOC and**
  - **Local Jurisdictions and**
  - **Broadcasters and**
  - **Citizens** (via NOAA Weather Radio)

**State EOC Sends (via EAS) Prescribed Message**

**EMD/COUNTY TSUNAMI WARNING**
- To: Activate AHAB Radios
- Local Jurisdictions
- Broadcasters
- Citizens (via NOAA Weather Radio)

**County Evacuation**

(This message sent as requested by the County)
- To: Activate AHAB Radios
- Local Jurisdictions
- Broadcasters
- Citizens (via NOAA Weather Radio)
Lesson 5
Citizens must be educated on tsunami warning response

- Message must be short and simple
- Workshops, media and public education materials
- Community and school exercises
- Testing tsunami communication systems
Summary

- Tsunami warnings can be effectively disseminated through multiple communication paths – infrastructure supporting them should be “life safety” and actively monitored for interoperability.

- Media is key for disseminating a tsunami warning – educating and training broadcasters on tsunami warning processes, evacuation routes/assembly areas, and providing videos they can air and a list of local experts will ensure that there is a consistent message.

- A seismic event provides the source for the initial tsunami warning -- tide gauge and buoy data provides sea level data to determine it’s potential impact -- you must be prepared for conflicting information.
Summary

- Tsunami warning requires a unified response at all levels of government to reduce confusion for the public and supports effective allocation of resources.
- Key to an appropriate response by the public: Keep warning message short and simple – regular testing of communication systems, holding workshops and exercises.