

EARTHQUAKE – TSUNAMI RESPONSE

As sailors we need to be aware of the ever present threat of a tsunami. By establishing emergency procedures for your crew and vessel along with knowing what to expect and do in the event of a tsunami it will be far less likely that you and your crew will become casualties and that your vessel will sustain damage. 59% of tsunamis occur in the Pacific with 80% caused by earthquakes.

In the event of an earthquake, time is of the essence as there may only be four minutes from the time of the earthquake to the arrival of a tsunami. Tsunamis travel at 300-600 mph in the deep and open ocean so waiting to see if civil defense alarms sound after an earthquake is not wise.

When we experienced the earthquake in Apia, Samoa in 2009 the alarm sounded approximately 12 minutes later. Already the water was rapidly receding from Apia Marina where we were moored. At the instant the sirens went off, the tsunami was already coming ashore on the south side of the island in a series of waves that would claim over 130 lives. The quake was centered approximately 120 miles south of Samoa and about 100 miles west of American Samoa.

The NOAA Pacific Tsunami Warning Center is located at Ewa Beach, Hawaii. They have seafloor and coastal sensors located around and across the Pacific but after an earthquake it takes them at least 12-15 minutes to analyze data to determine if there is the potential for a tsunami. It is important to note that there can be as much as 300-400 miles between tsunami crests, so after the initial series of tsunami waves hit, the second series of waves may occur up to one hour later. This was the case in the 1960 tsunami that devastated Hilo, Hawaii, which had 35' waves and claimed 61 lives.

Tsunami Awareness

Mid Ocean

As mid-ocean tsunami wave height is generally less than 3', tsunamis are frequently unnoticed by mariners.

When Ashore in a Coastal Location

In any coastal location always note the tidal range and times. If you ever see the sea level receding lower than normal realize that this is the natural warning sign of an approaching tsunami. If ashore, do not go out on the exposed reef or shore to collect fish, as locals frequently do. You must immediately run inland to high ground or get above the third floor of a sturdy building, if available. Tsunamis have traveled .7 mile or further inland if the terrain is flat, so the option of going to the highest floor of a sturdy building may be safer than attempting to run inland. In the Samoan tsunami the ground floors of many buildings were washed clean of everything and it would not have been possible to survive due to backwash of debris and swift currents, while above the third floor many buildings were relatively undamaged.

When Aboard

If you are docked and experience an earthquake or rapidly receding water, immediately start your engine, cut your docklines and motor at full speed to water deeper than 150'. If the event occurs at night and/or it isn't possible to safely leave the harbor, quickly leave your boat running for the hills or to a tall, substantial building.

At Anchor

If you are at anchor and experience an earthquake or rapidly receding water, immediately start your engine, raise your anchor and get to deeper water. In the 2009 tsunami that hit Niuaotupapu, friends aboard a 39' sloop tried to raise anchor immediately after the earthquake but found their chain wrapped around a coral head, so they let out all of their chain. When they saw the 13' high surge come over the reef they kept the bow pointing into the wave while maintaining full forward throttle. They managed to survive the series of waves and swirling current with only stretched chain and a damaged windlass.

When leaving the boat, here are some priorities to quickly grab:

1. Passports, cash and credit cards
2. Iridium satellite phone
3. Cell phone
4. VHF handheld radio (this proved very helpful in Samoa)
5. Flashlights
6. Knapsack
7. Water bottle
8. Granola bars or similar
9. Necessary prescription medicines
10. Running shoes
11. Jacket