

Welcome to the second SQUG/SEQUAL Newsletter of 2006. We hope you find this brief update on SQUG/SEQUAL related activities informative and useful.

John Richards
SQUG/SEQUAL Chairman

Recent Earthquakes

A few of the more recent earthquakes are noted below. You can check out the USGS Website for additional information on any of these earthquakes or other earthquakes (<http://earthquake.usgs.gov/eqcenter/index.php>).

Hawaii

Two large earthquakes (M6.7 and M6.0) occurred on October 15, 2006 just off the northwest coast of the “Big Island” in the Hawaiian Islands. No deaths were reported although power outages were reported throughout the Hawaiian Islands.

An initial investigation was performed within days by the Department of Civil and Environmental Engineering at the University of Hawaii. You can download a copy of that report from the Earthquake Engineering Research Institute website (www.eeri.org/lfe/usa_hawaii.html).

Initially this did not appear to be an important earthquake for SQUG/SEQUAL to investigate because it occurred in one of the more sparsely populated regions of Hawaii. However, there are a few

facilities in the area and a number of good recordings so we are estimating response spectra and taking another look to see if it may be a valuable earthquake. We’ll present some of the recordings and preliminary findings at the December 6-8 Winter meeting.

Kuril Islands

A very large earthquake (M8.3) occurred northeast of Japan on November 15, 2006. This earthquake didn’t directly cause significant damage but it did cause a small

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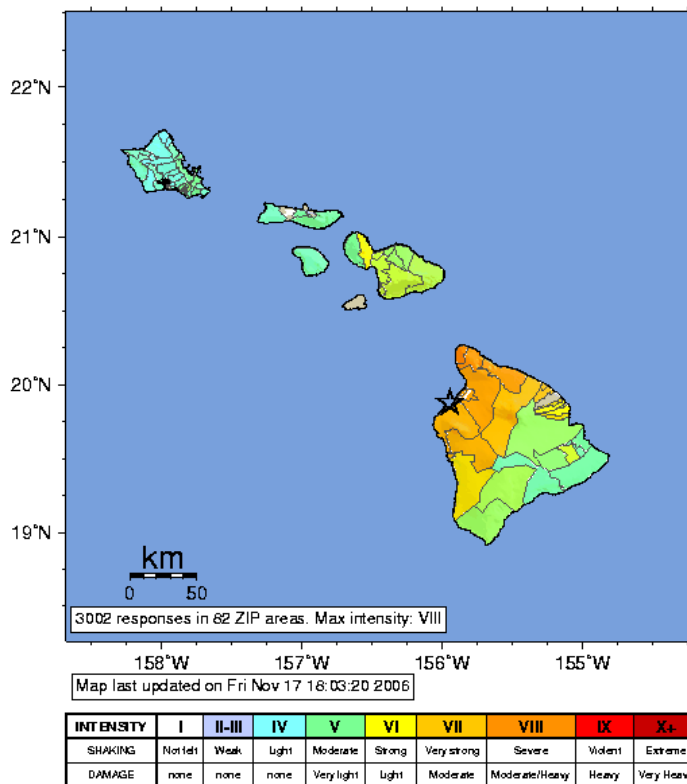
tsunami in Japan and a larger tsunami, almost 6 ft, in Crescent City, CA.

CEUS Earthquakes

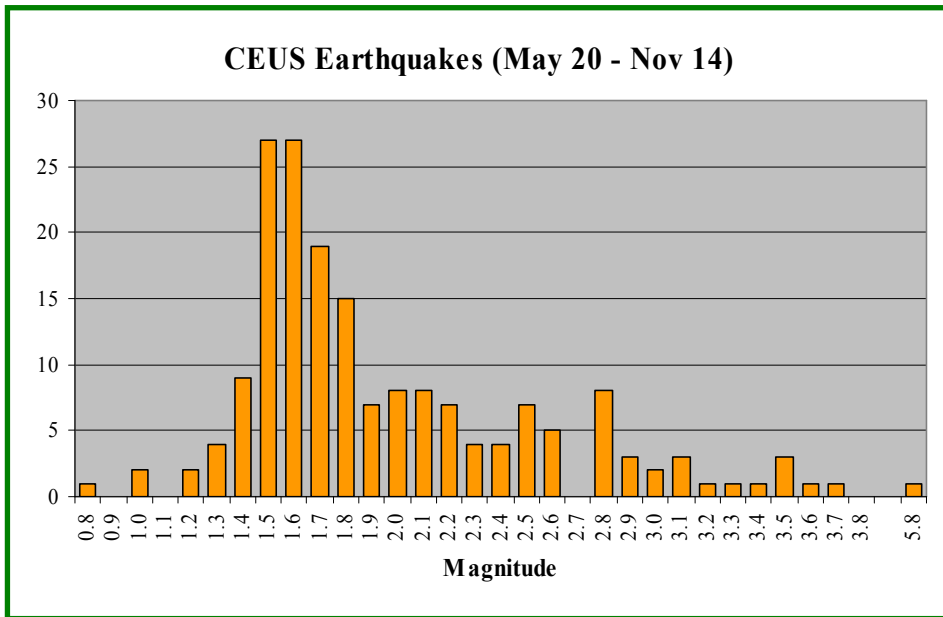
Between May 20 and November 14, the USGS recorded 181 earthquakes in the Central and Eastern US (CEUS). Of those, 167 were less than M3.0 and only one earthquake was greater than M3.7 ([http://folkworm.ceri.mphs.edu/recenteqs/](http://folkworm.ceri.mphis.edu/recenteqs/)). The chart below shows the distribution by magnitude. A few of those CEUS earthquakes are described below.

- **Gulf of Mexico – M5.8:** On September 10, 2006, a rare, strong earthquake occurred in the middle of the Gulf of Mexico. The epicenter was more than 200 miles from land in any direction so no significant damage was reported.
- **Bar Harbor, Maine – M3.8:** This minor earthquake occurred

USGS Community Internet Intensity Map (10 miles NNW of Kailua Kona, Hawaii, Hawaii)
 ID:twbh_06 07:07:48 HST OCT 15 2006 Mag=6.7 Latitude=N19.88 Longitude=W155.94

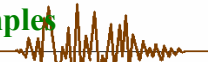


USGS Community Internet Intensity Map
 (Did you feel it?)



supported at DC Cook. Each of these will be discussed in more detail at the December Winter meeting.

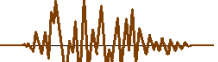
NERP Examples



In addition to the Member Requested evaluations, a few other NARE Examples are being developed for posting on the SQUG Website. A replacement pump/motor example will be discussed in the December Winter meeting and prepared for posting on the Website.

A trailer mounted spare diesel generator will also be discussed in December and developed into a NERP Evaluation. It may not be a common example, but it sure is an interesting application!

MCEER Partnership Update



We're still working with MCEER (<http://mceer.buffalo.edu/>) to complete a licensing agreement to use the SQUG experience data for evaluating

on October 3, 2006, 4 miles from Bar Harbor. No significant damage was reported.

- **Winston-Salem, NC – M2.8:** Two M2.8 earthquakes occurred on October 17, 2006 near Winston-Salem, NC. One was at 4am and the other was around 8pm. Neither caused any significant damage.
- **Blenheim, SC – M3.7:** A minor earthquake occurred on September 25, 2006 near Blenheim, SC. Light shaking was felt as far away as Charlotte and Columbia but no significant damage was reported.
- **Cornish, OK – M3.5:** This minor earthquake occurred on October 6, 2006 about 4 miles from Cornish, OK.

discussed in the December 2005 Winter meeting and the July 2006 Newsletter, this is a process where SQUG/SEQUAL Members can request no-cost NARE evaluations for their plant specific applications.

The process was recently used at Ginna to evaluate a replacement valve. Another replacement pressure regulator evaluation at Ginna was also supported by a SQUG contractor and a replacement relay evaluation was

2006 Winter Meeting

The 2006 SQUG/SEQUAL Winter meeting will be on December 6 through 8, 2006 at the Hyatt Fisherman's Wharf in San Francisco, CA. You should have received an official announcement from Bob Kassawara several weeks ago. The meeting will start at 1:00pm on the 6th and end at noon on the 8th. You can check out the hotel at <http://fishermanswharf.hyatt.com/hyatt/hotels/index.jsp>.

We hope you'll be able to join us to receive updates on our activities, network with your peers, and help us steer the organization to best meet your needs.

We'll also ask everyone to take a moment to describe the seismic issues going on at your plants and utilities. So, before coming to San Francisco, you might want to think about the issues and successes you have to share!

By the way, please remember to return your meeting registration form. It is very important for planning the various meals. See ya there!



Member Requested NARE Evaluations



On July 20, you should have received an announcement of the policies for Member Requested NARE Evaluations through the SQUG List Server. As

equipment in commercial facilities. Most of the details have been resolved although the lawyers are still ironing out a few details.

In support of this agreement, we have started assembling a “Commercial” version of the GIP that will describe the equipment classes and the rules for using them for qualification. We believe it is important that access to the data be accompanied by the criteria for using the information. The license agreement will also include a copy of the SCE training materials as well as our Procedure for performing earthquake investigations. All of this will be discussed at the SQUG/SEQUAL Winter meeting this December.

eSQUG Update

We are working on an update to the eSQUG web-based earthquake experience database. This latest update will add data from the 1994 Northridge earthquake from 5 sites and over 200 equipment records.

SQUG collected equipment data at these sites on reconnaissance trips following earlier earthquakes, and this data was included in the database along with the site spectra for the earlier earthquakes. The Northridge earthquake came along and shook the same equipment, but we didn’t have site spectra calculated to use in eSQUG. The 2006 eSQUG update is developing site spectra for the five sites using nearby recordings, creating new equipment records with information from Northridge earthquake reports, and entering the new spectra and records into the database. The new information is valuable because the Northridge spectra are generally higher

than the spectra from earlier earthquakes, which helps capacity calculations. The data also helps address concerns about the effects of multiple earthquakes.

Potential plans for 2007 include adding earthquake and test experience data for tubing and compression fittings into the database. SQUG collected this information at the request of the International members to support the Piping Evaluation Guidelines. Decisions on 2007 eSQUG support will be made at the SQUG/SEQUAL Winter meeting.

European Meetings

We were working on plans to hold a series of meetings in October with our European members. Unfortunately, after determining appropriate meeting topics and investigating potential meeting dates, we had to postpone the meetings until next spring. A number of conflicts arose around September and October that made it impossible to properly prepare for and hold the meetings.

These meetings will be a follow-up to the very successful meetings held in October 2003. Those meetings were an excellent forum for improving our interactions with many of our European members. We were able to provide updates to a much broader cross section of their representatives and they were able to provide feedback to us on a variety of seismic issues.

We are now working on plans to hold these meetings in April 2007 and will make every effort possible to ensure we meet this schedule.

New Plant Seismic Issues

As we near the end of 2006, a lot of new plant seismic issues are reaching a crescendo. You may recall that the major seismic issue is that the estimated site ground motions exceed the standard ALWR design spectra, primarily in the higher frequency range. EPRI sponsored research has led to a number of proposals that can reduce the high frequency exceedance, and a series of NRC meetings and

Document	Title	Release Date
DG-1156	Seismic Design Classification (update to RG1.29)	10/25/06
DG-1157	Damping Values for Seismic Design of Nuclear Power Plants (update to RG 1.61, see also NUREG/CR-6919)	10/25/06
DG-1146	A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion, (alternate to RG 1.165)	10/31/06
SRP 3.7.1	Seismic Design Parameters	1/15/07
SRP 3.7.3	Seismic Subsystem Analysis	1/15/07
SRP 2.5.1	Basic Geologic and Seismic Information	1/31/07
SRP 2.5.2	Vibratory Ground Motion	1/31/07
SRP 2.5.3	Surface Faulting	1/31/07
SRP 2.5.4	Stability of Subsurface Materials and Foundations	1/31/07
SRP 2.5.5	Stability of Slopes	1/31/07
SRP 3.7.2	Seismic System Analysis	2/15/07
SRP 3.7.4	Seismic Instrumentation	2/15/07

Recent and anticipated updates to NRC Guidelines for New Plants

technical reviews have resolved some questions and raised others.

At the same time, the plant vendors are running seismic analyses and utilities are developing site-specific spectra in order to meet their submittal schedules, while watching the industry/NRC interactions and trying to anticipate the eventual final policies.

The NRC recently released DG-1146, "A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion," which outlines an alternate approach for determining site-specific ground motions. It was issued exactly when promised and included a number of items the industry has been advocating, although not all of them. Other critical items will need to be incorporated into revisions of the Standard Review Plan, which are anticipated early next year. There will be a public meeting with the NRC December 14th in Rockville, MD to

discuss DG-1146 and related topics. You can find the NRC meeting announcement on their website or you can contact Adrian Heymer at NEI (202-739-8094, aph@nei.org) for more information.

Speaking of anticipated updates to NRC guidelines, the table above provides a partial list of recent or anticipated new or updated NRC seismic guidelines.

You can contact Adrian Heymer or Bob Kassawara for the latest information on any of the new plant seismic issues.

In Closing

As always, we hope you find this Newsletter valuable and that it helps keep you up to date on our SQUG/SEQUAL activities and other significant seismic issues. If you have any comments, thoughts, or

contributions for the newsletters please let us know.

We look forward to seeing you at the Winter meeting in San Francisco and we hope everyone has an enjoyable and safe holiday season!



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