

Welcome to the second SQUG/SEQUAL Newsletter of 2007. It has been an eventful year full of challenges and opportunities. Hopefully this brief update on SQUG/SEQUAL related activities will be informative and useful and will wet your whistle for the upcoming SQUG/SEQUAL Winter meeting on December 5-7.

John Richards
SQUG/SEQUAL Chairman

Recent Earthquakes

The big seismic news in our business this year was the July 16 M6.6 earthquake 16 kilometers (10 miles) from the Kashiwazaki-Kariwa nuclear power plant in Japan. News of the earthquake and the K-K plant's response spread quickly around the nuclear industry. I'm sure most of you saw the pictures of the burning non-safety transformer and many of you were contacted by your public relations folks to offer statements about the seismic safety of your plants.

It turns out that the K-K plant responded very well to the earthquake and from an engineering perspective, was a big success in terms of seismic design and qualification of typical

nuclear plants. In an earthquake significantly beyond its design basis, the safety related plant structures, systems and components did what they were designed to do. Coupled with positive plant staff actions in response to the earthquake, they maintained the plant in a safe condition.

Unfortunately, you might need to be a seismic engineer working in the nuclear industry to see this experience as a success. All seven units are in a long term shutdown and TEPCO is working to secure adequate replacement power.

There are many opportunities for lessons learned. INPO recently issued a Significant Event Notification (SEN-269) which provides a nice

In This Edition

Recent Earthquakes1
 Other Earthquakes2
 SCE Walkdown Training
 in Lyon.....2
 Seismic Housekeeping2
 IAEA Seismic Study of
 Japanese Earthquakes3
 2007 Winter Meeting.....3
 eSQUG Update3
 New Plant Seismic Issues4
 GI-1994

overview of the event and a good summary of the lessons learned to date. They identified the following key lessons:

- An integrated emergency response strategy and alternate methods of communication can improve the response to site wide events with multiple challenges.
- On-site fire protection systems and local fire department response may be challenged during natural disasters.
- Unexpected radiological liquid and gaseous releases can occur following natural disasters.
- Seismic events can impact the integrity of radioactive waste storage drums or other items that are stacked without restraints.
- Alternate means of personnel contamination monitoring may need to be established following a natural disaster.

These seem to be a pretty good summary of the lessons although I might add to the list that the seismic design

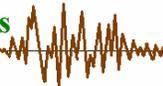


practices at the plant performed well, even in an earthquake significantly above the design basis.

TEPCO's current challenges include determining the necessary inspection and testing requirements to demonstrate that it is safe to restart the plant. Most of us don't have procedures in hand to make those evaluations for an earthquake beyond our design basis so this will be a first-of-a-kind engineering effort. EPRI, SQUG, and several others are heavily involved in supporting TEPCO. In fact, TEPCO just joined the SQUG/SEQUAL organization, which will improve our interactions with them.

We will have an extensive discussion of the Kashiwazaki earthquake at the Winter meeting including a review of the plant design, seismic instrumentation, significant plant problems, examples of success, and paths forward.

Other Earthquakes



Peru

Other than the Kashiwazaki earthquake, the most significant earthquake in 2007 was the M8.0 quake on August 15 in Peru. That earthquake killed 514 people, injured almost 1,100, and destroyed more than 35,000 buildings. In spite of all that damage, it didn't have the combination of amplitude, nearby industrial facilities, and access appropriate to warrant a SQUG investigation.

Hawaii

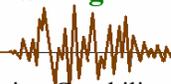
In the last Newsletter, we noted a M6.7 quake on October 16, 2006 in Hawaii. Preliminary calculations showed several recording stations with spectra well above the SQUG Reference Spectrum. We've had some discussions with the Hawaiian electric utilities and we may be able to get some valuable success data. We

are reviewing some preliminary reports on their behalf and waiting for potential legal issues to be resolved.

Chili

Just as we were going to press another big quake occurred; a M7.7 event in northern Chili followed by at least two aftershocks greater than M6.2. Initial reports suggest that there may be significant damage and some loss of life although the depth of the rupture (37 miles) and the remoteness of the affected region may limit the extent of damage.

SCE Walkdown Training in Lyon

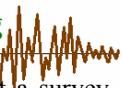


We conducted Seismic Capability Engineer (SCE) Walkdown Training at the Electricité de France (EdF) offices in Lyon, France in October. There were fifteen students with eight from EdF, five from Sweden, and two from Belgium. The training took advantage of updated materials that incorporated improvements and minor error corrections identified earlier in the year at the Richmond session. The photo below shows the students along with the lead trainer, Paul Baughman.

If you ordered a copy of the SCE

Training materials from EPRI some time in the last year or so, you should have automatically received a copy of the updated materials. You can order the latest SCE Training info (Rev 4.1, with 6 DVDs of video and 4 CDs of reference materials and training workbooks) through EPRIWeb (<http://my.epri.com>) using report number 1007683.

Seismic Housekeeping



On October 16 we sent out a survey about seismic housekeeping requirements. The survey asked members to submit copies of their controlling documents associated with housekeeping requirements covering general housekeeping as well as controls for scaffold and guidance for working in electrical enclosures.

We've been very pleased with the responses submitted so far and have received responses from 12 utilities totaling 40 documents. If anyone has additional information to contribute, please contact Dick Starck at rgstarck@mpr.com.

By the way, you may have noticed that the NRC issued an Information Notice (2007-29) on *Temporary Scaffolding Affects Operability Of Safety-Related Equipment*. The IN



SCE Walkdown Training in Lyon

was issued to “alert licensees about recent operating experience at nuclear power facilities where temporary scaffolding installed to support maintenance activity has affected the operability of safety-related equipment.” No official or written responses are necessary, however the NRC expects “that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems.” It seems that the NRC has noticed the same issues we discussed in last year’s Winter meeting, which lead to this survey.

We are currently categorizing the survey results and working towards development of a Best Practices document. We’ll present the preliminary information and include an opportunity for discussion at the Winter meeting.

IAEA Seismic Study of Japanese Earthquakes

We previously mentioned a new 3-year project through the IAEA to study the performance of nuclear power plants in earthquakes. Even before the Kashiwazaki earthquake, the Japanese experienced a number of significant earthquakes near their nuclear plants. These experiences led them to initiate a project through the IAEA covering four Working Group focus areas:

1. Re-evaluation of seismic hazards,
2. Re-evaluation of seismic safety for the existing plants,
3. Post earthquake plant response, and
4. Earthquake experience database.

SQUG/SEQUAL is primarily interested in the earthquake experience database and the kind of data that we hope to be made

We’ve had an interesting year in SQUG-land. In large part we’ve returned to our roots of earthquake investigations and training. At the same time we’ve continued exploring new partnerships and looked into current issues for our operating plants.

Hear all about it at the SQUG / SEQUAL Winter Meeting on December 5 - 7 at the [Hyatt Gainey Ranch](#) in Scottsdale, Arizona.

You should have received an e-mail invitation from the EPRI meeting planner with links to confirm your attendance as well as instructions for making your hotel reservations (\$169/night U.S.). The meeting will start at 1:00pm on Wednesday the 5th and end at noon on Friday the 7th.

If you haven’t received your invitation, or if you have any questions about the invitation you can contact Laura Goldie (650-855-2560, lgoldie@epri.com) or Bob Kassawara (650-855-2775, rkassawa@epri.com).

2007 Winter Meeting



available from a number of significant earthquakes, including Kashiwazaki.

A kick-off meeting for the project was held in September to get organized and select initial activities. We will be working closely with the leaders in Working Group 4. A fifth Working Group focus area was created at the kick-off meeting for Coordination with Kashiwazaki and Bob Kassawara was elected the Working Group Chairman.

SQUG and EPRI will be contributing a number of documents to the overall project including the GIP, the SQUG Procedure for Gathering Earthquake Experience Data, the EPRI OBE exceedance and plant response guidelines, and the Seismic Margins guidelines.

In addition to the earthquake experience data, participation in this project will help keep us connected to some of the latest international

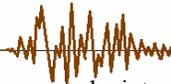
activities regarding seismic safety of nuclear plants.

eSQUG Update

The planned eSQUG update for earlier this year with the computed site-specific Northridge Earthquake response spectra was delayed until the end of the year. In addition to the Northridge spectra, we are adding the tubing and compression fitting data collected in association with the piping evaluation guideline. We believe this update brings us to a place where we are caught up with incorporating the most valuable data into the database.

The updated data has been delivered to EPRI and they are running their QA acceptance tests before loading it on the QA server. So look for eSQUG Version 2.3 to show up soon.

New Plant Seismic Issues

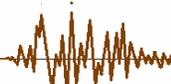


The generic industry research into advanced methods for reducing the high frequency ground motions is drawing to conclusion. The final report on incoherency still needs to be completed and submitted to the NRC and the industry has a few outstanding comments on the NRC's Interim Staff Guidance. However, most of the previously identified generic issues have been resolved.

A few new plant Construction and Operating (COL) Applications have been submitted and several more are expected before the end of the year. Assuming they make it through the NRC acceptance reviews, we'll be moving on to the long review process. No doubt, it will be interesting.

You can contact Adrian Heymer at NEI (202-739-8094, aph@nei.org) or Bob Kassawara for the latest information.

GI-199



The NRC identified Generic Issue 199, "Effect of New Seismic Hazard Results on Existing NPP in CEUS" a few years ago because seismic hazard studies and associated evaluation methods used in the new plant ESP and COL applications resulted in significantly different uniform seismic hazard shapes and design ground

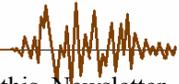
motions than the licensing bases used for existing NPPs. For a limited number of plants, these new design ground motions also exceed some portions of the IPEEE review level earthquakes used to reevaluate the plants in the 1990s. The NRC concern is that the seismic evaluations for some U.S. operating nuclear power plants may no longer adequately address the risks identified in these studies and methods. Fortunately, most of these ground motion exceedances are in the higher frequency ranges, which are typically non-damaging.

Earlier this year the NRC completed a screening analysis for GI-199 and decided that it "warrants further analysis under the Generic Issue Program (GIP)." On the other hand, they also concluded that "there does not appear to be an issue that requires immediate action to protect public health and safety." They are evaluating the severity of the safety significance and expect to make a decision in the Feb/March 2008 timeframe.

NEI and EPRI are working on an industry screening review to determine the potential plant-specific significance. In parallel, EPRI is also getting started on efforts to update the site-specific EPRI Seismic Hazards, which also has a potential impact on this issue.

We'll discuss these issues at the Winter meeting.

In Closing



As always, we hope this Newsletter 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 Scottsdale and we hope everyone has an enjoyable and safe holiday season!



SQUG/SEQUAL Chairman
Duke Energy
Phone: (704) 382-3916
Fax: (704) 382-4360
jmricha@duke-energy.com



Program Manager
EPRI
Phone: (650) 855-2775
Fax: (650) 855-1026
rkassawa@epri.com