

Welcome to the first SQUG/SEQUAL Newsletter of 2003. It's a quick update on a variety of activities that we believe will be of interest to you.

As always, we encourage you to send in your comments and thoughts so that we can make the Newsletters as valuable as possible.

John Richards
SQUG/SEQUAL Chairman

NARE Implementation and NARE Forms

As the latest NARE Guideline was being published, there were a number of questions about the various forms that could be used for NARE evaluations. The ultimate goal of the NARE evaluation should be to make sure that all of the appropriate technical issues are adequately addressed.

Officially, utilities can make up their own forms or not use any form. There is no obligation to use the published forms. However, a lot of effort went into streamlining the NARE evaluations by creating forms to guide the seismic engineer through the appropriate steps so, we recommend that you consider taking advantage of the forms.

There are two groups of SQUG forms for evaluating equipment. The GIP SEWS forms guide the engineer through the standard seismic evaluation of the equipment. The NARE forms supplement that review with the additional considerations necessary for new and replacement equipment. Most importantly, the design difference evaluation, which makes sure the newer equipment is still represented in the existing earthquake experience.

Sole reliance on either form would make it less likely that the appropriate issues will be addressed. That's not to say that it can't be done, and done correctly, but it would require each engineer to remember to document the

appropriate portions of the evaluation. Obviously, the forms make it more likely that something won't be missed.

While we're talking about NARE implementations, we'd like to remind everyone that it's essential to our collective success that we perform thorough NARE evaluations. The NARE Guidelines, NARE Training, and NERP examples are intended to provide guidance in performing complete NARE evaluations. The NRC already has doubts about the quality of our NARE implementation. This perception has made it more difficult to make progress on the ASME and IEEE Standards as well as SEQUAL. It is up to us to prove them wrong by performing good evaluations.

NARE Training

The next NARE Training will be offered late this fall (probably in November). An announcement will be sent out this summer.

As we discussed in last December's meeting, this is expected to be last NARE course offered free to SQUG/SEQUAL members. Future NARE courses are expected to be on a paid basis.

NERP Update

Seven NERP Evaluations are complete and will be posted on the "new" SQUG/SEQUAL web site in June.

In This Edition

NARE Implementation and NARE Forms	1
NARE Training.....	1
NERP Update	1
SQUG/SEQUAL Web Site	1
eSQUG Release.....	1
Earthquakes Old and New....	2
HVAC Guideline.....	3
ASME & IEEE Standards	3
SEQUAL Update.....	3
SQUG/SEQUAL Dues	3
Winter Meeting	4

The NERP Team is considering developing evaluations for cable trays and for a subcomponent. In addition, they continue to look for more examples so please contact Don Moore (dpmoore@southernco.com, 205-992-6672) if you have any to offer.

SQUG/SEQUAL Web Site

A new SQUG/SEQUAL web site will be available soon! The new site will include all of the information the old site had but arranged in a much more user-friendly form. Look for it at the end of June.

In the mean time, you can still use the old SQUG web site at <http://squgweb.mpr.com>

eSQUG Release

You should have received an e-mail through the SQUG List Server announcing the release of Revision 2.0 of eSQUG. You can access it at www.epri.com/esqug. The new eSQUG site uses your email address as your User ID along with the same password as before. We're using e-mail addresses because the EPRI rules

for QA databases required that we identify who uses the database so that they can notify everyone in the event of an error.

Revision 2 is the first complete QA version of eSQUG and includes new data from the 1994 6.7M Northridge earthquake and the 1995 7.6M Manzanillo earthquake.

Another release planned for later this year will include data from several sites in the September 1999 Chi Chi Taiwan Earthquake (7.6M) and will incorporate the special damage evaluation reports into the database.

Earthquakes Old and New



As you know, we continue to evaluate earthquake damage reports and investigate new earthquakes that we believe will enhance our data. Here's a quick update on several earthquake investigations and a few recent events.

Turkey Damage Evaluations

Back in August 1999, a 7.4M earthquake occurred in Turkey. At the December '99 SQUG meeting, we noted that there were 4 reported equipment failures that we were investigating. Here's a brief description of what we've found. Note that these failure investigations will be included in the next eSQUG update.

Cable Tray: MCEER¹ reported that there was a cable tray failure at the Hyundai facility due to the use of non-standard supports, which were poorly designed from a structural perspective. The supports had

eccentric type designs, which allowed for excessive prying forces during the seismic event. This type of support would be an outlier in the GIP, thus, no changes to the GIP are necessary due to this failure.

Transformer at Bridgestone: A transformer failure was reported at a Bridgestone facility. Further investigation discovered that the transformer failed because a block wall fell on it. The GIP already requires reviews for potential interactions; therefore, no GIP changes are necessary.

Transformer at Yarimca: The damage reported on this 154kV/34.5kV transformer was a short to ground on a Load Tap Changer Motor. A Load Tap Changer can automatically change the output voltage of the transformer. Our investigations into this failure revealed that our safety related transformers within the GIP classes do not have Load Tap Changers. Also, discussions with electrical engineers at several plants revealed that failure of these Load Tap Changers would not affect the overall electrical operation of the transformer. Therefore, this failure evaluation is complete and does not require changes to the GIP.

Valve Damage: MCEER reported a failed regulator valve for the gas furnace at the Bastas fluorescent bulb factory. After significant efforts, we have been unable to gain further information to substantiate this report from the Bastas company or from the MCEER investigators regarding this reported failure. In view of previous industry testing experience and SQUG's earthquake experience with hundreds of valves, we have high confidence that no new caveats are warranted by this reported failure.

Gujarat India EQ Investigation

A SQUG team went to India in March 2002 to investigate equipment performance in the Gujarat earthquake. Overall, the equipment performed very well. For the most part, everything worked except for cases where the buildings collapsed onto the equipment. As we discussed in last December's meeting, only a few isolated equipment failures were identified and evaluated.

The investigation report will be published later this year as an EPRI report. We'll let you know when it hits the street.

Mexico (Colima) Earthquake

On January 22, 2003 a Magnitude 7.8 earthquake occurred on the Pacific coast of Mexico. The epicenter was only 30 miles from the Manzanillo power plant, where we have seismic instrumentation.

On first hearing of this earthquake, it appeared that it could be a treasure trove of new, high level data. However, investigations by other organizations have not identified significant equipment damage. Also, unfortunately for us (although perhaps more fortunate for the folks in Mexico!), the recorded ground motions at the plant were not as high as we anticipated. The spectra in one horizontal direction enveloped the GIP Reference Spectrum but not in the other direction. Since the two horizontal spectra need to be averaged together to establish the "site spectrum," the averaged spectrum would not be that high.

With that said, we are considering returning to the site to collect additional equipment success data that could be linked to the very high (Magnitude 7.6) October 1995 earthquake.

¹ Multidisciplinary Center for Earthquake Engineering Research (<http://mceer.buffalo.edu>)

Alabama Earthquake!

On April 29, 2003 as we were having our SQUG/SEQUAL Steering Group meeting, an earthquake occurred in northern Alabama. It was small (4.9M), and nothing happened, but I thought I'd mention it since they happen so rarely in the eastern U.S.

Several nuclear plants were within 100 miles of the earthquake, but none of their seismic instruments triggered.

Honshu Japan Earthquake

A large earthquake (Magnitude 7.0) struck just off the coast of Honshu, Japan on May 26, 2003. There was some damage and injuries but the earthquake's impact appears to have been limited due to the epicentral depth (~42 miles).

HVAC Guideline

The HVAC Evaluation Guideline has been published as EPRI Report TR-1007896. You can download an electronic copy of the report or order a printed, bound copy on EPRIWeb (www.epri.com). The easiest way to find the report is to enter the report number in the search field on the EPRIWeb home page. That will bring you to a page where you can download the actual report in PDF format or request a printed copy.

ASME QME and IEEE 344 Standards

It appears that the revised ASME QME Standard, which includes the use of earthquake experience data, has been approved! **Hallelujah!**

There is one outstanding vote to resolve but I believe that hurdle should be cleared soon. It is also encouraging to see that the two NRC

members on the QME Main Committee voted to approve.

I believe special recognition is due the following Subcommittee "core working group" members who met for several years to make this happen.

Tim Adams, S&A (Chairman)
George Antaki, WSRC
Paul Baughman, ABS
Bob Burns, TXU
Kamal Manoly, NRC
Don Moore, Southern Co
John Richards, Duke Energy
Dick Starck, MPR

The IEEE 344 Working Group continues to meet on an aggressive (some would say brutal) schedule. One draft was balloted amongst the Working Group in December and received approximately a 2/3 approval. Now we are working to resolve comments from the remaining 1/3 negative ballots.

The current schedule is for the Working Group to deliver a draft up to the Nuclear Power Engineering Committee (NPEC) in July. There are a few steps along the way so the Working Group will likely continue to have monthly meetings in order to meet that schedule.

SEQUAL Update

The NRC letter we've been waiting for finally arrived. The purpose of the letter was for the NRC to document their response to SEQUAL's RAI response and information we presented at a December 4, 2002 meeting. You should have received a copy of the letter by e-mail on Friday May 30.

The NRC Staff has decided that there remain several technical concerns with use of the Experience-Based Seismic

Equipment Qualification (EBSEQ) method. The staff also concluded that they do not believe that these technical concerns can be readily resolved and therefore rejected the EBSEQ Topical Report.

Obviously, we are very disappointed with this response and are considering our options for responding. The Steering Group plans to send a follow-up note to members with our recommendations.

SQUG/SEQUAL Dues

In last December's SQUG meeting, we committed to reduce the dues for domestic SQUG utilities by about 25% for 2004. (International SQUG members and SEQUAL members use a slightly different formula for dues and will remain unchanged.) We also mentioned that, since we were reducing the dues, it would be a good time to evaluate adjusting the dues structure to a more logical formula. The members agreed and asked the Steering Group to try to work something out based generally on a per site basis.

Coincidentally, the EPRI Nuclear Power Council (a committee of our nuclear executives who oversee EPRI's nuclear program) decided to establish consistent rules for dues structures for co-funded EPRI activities (that includes us just in case you got lost in the buzzwords). By 2005, we will be required to comply with the general dues structure established by the NPC. Fortunately, one of the available options from the NPC is fairly close to the direction we were moving towards anyway.

So, I believe we have a plan that is fair and results in at least some dues reduction for almost every member.

The domestic SQUG dues structure for 2004 will be \$5k for each SQUG utility plus \$10k for each SQUG site within the utility. We had previously considered decreasing the dues for each additional site but those types of “declining dues structures” are not allowed under the new NPC criteria.

International dues will remain as a flat fee per utility and SEQUAL dues will remain as \$15k for non-SQUG utilities and \$10k extra for SQUG utilities.

Winter Meeting

This is a very early reminder that the SQUG/SEQUAL Winter meeting will be on December 10-12 in San Antonio. You should have received an early meeting notice by e-mail from Bob Kassawara on April 25th. We look forward to seeing you in December!

That's All Folks

We hope you find this Newsletter of value and that it helps to keep you up to date on our SQUG /SEQUAL activities.

If you have any comments, thoughts, or contributions for the Newsletters, please let us know.



SQUG/SEQUAL Chairman

Duke Energy

Phone: (704) 382-3916

Fax: (704) 382-3993

jmricha@duke-energy.com



Program Manager

EPRI

Phone: (650) 855-2775

Fax: (650) 855-1026

rkassawa@epri.com