

From: RILEY, Jim
To: Miller, Ed
Subject: Fwd: ENERCON Comments_Draft_JLD_ISG_2012_06_Surge ISG (general)
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Jim Riley
Sent from my iPhone

Begin forwarded message:

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Please find the revised comments. As discussed I have reduced the comments to topics of discussion, with short discussions and questions following. We can edit this further after circulating among the stakeholders.



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November 13, 2012

Jim Riley
Nuclear Energy Institute

Dear Jim,

Enercon Services, Inc. (ENERCON) has completed a review of JLD-ISG-2012-06 – “Guidance for Performing a Tsunami, Surge, or Seiche Hazard Assessment” DRAFT Interim Staff Guidance, ML 12271A036. We have general comments related to the content of the DRAFT ISG.

Comments related to Enclosure 1, storm surge evaluations:

1. Deterministic vs. Probabilistic Methodology – No firm stance is presented in the ISG on acceptability of choice of analysis approach

The ISG outlines both deterministic methods (PMH based on NWS-23 for Atlantic hurricanes; ANSI/ANS-2.8-1992 for extra-tropical and Great Lakes) and probabilistic methods (JPM for hurricanes; EST) as being appropriate for the analyses.

- a. Can the ISG provide a firm acceptance of both methods? As written, there is ambiguity as to the acceptability of deterministic methods.
- b. The ISG indicates that NWS-23 contains inconsistencies with the current state of the science. Can the ISG provide a more definitive outline of the parameters that are considered to be out-of-date and methods and references that address the revision of the parameters.

2. Time and expense to complete Probabilistic Studies

The JPM and EST methods are time-intensive, computation-intensive, and require specialty software. Additional schedule and expense cannot be met for Tier 1 Plant studies. Many Tier 2 and 3 studies are contracted and underway, and may also not be capable of meeting schedules for completion if the analytical methods are changed from deterministic to probabilistic. There are additional issues with verifying and validating additional software programs and input data.

3. NUREG/CR-7134

NUREG CR-7134 is referenced in the ISG (Resio, et. al, 2012), but it does not appear that technical methods and guidance in NUREG CR-7134 are incorporated into the DRAFT ISG. NUREG CR-7134 outlines probabilistic methods that are not presently standard practice in the performance of recent surge analyses for COLAs and ESPs.

- a. It would not be possible to meet the present submittal schedule to NRC (March 12, 2013) given the expanded level of effort required to perform the analyses under the methods presented in NUREG CR-7134.
- b. Will the methods outlined in the DRAFT ISG, which do not prescribe the use of NUREG CR-7134, be acceptable for the analyses?

4. Probabilistic Approach based on current FEMA and USACE studies

FEMA and USACE are currently completing coastal flooding studies using probabilistic methods. The FEMA studies will not be completed for approximately 3 more years. Therefore, these studies and corresponding data cannot be incorporated in the 50.54f Flooding Hazard Evaluations, which are due within the next 2.5 years.

5. Terminology

The ISG attempts to clarify various terms: DBF, SH, SWS, SSS, SSS, and DBSS. This causes confusion with the existing terms such as PMH, PMSS, etc. from other NRC guidances and various standards and manuals from USACE, FEMA, USGS, NOAA, NWS, etc. As a clear step forward, what terms would NRC prefer in the 50.54f flooding hazard reevaluation response reports? It may be useful to clarify what terms should be used, what old terms are analogous to the new terms, and what terms are obsolete.

6. Acceptability of Software Applications

The ISG includes only ADCIRC and SLOSH computer software applications. However, there are more software programs (such as DELFT3D, MIKE21, and others) that are currently used to model coastal/atmospheric/planetary boundary layer processes. As the DRAFT is written, it seems to imply that NRC is only endorsing particular software programs.

7. Applicability to Pacific Basins and Great Lakes

The ISG focuses on Atlantic Ocean hurricane-induced surges and provides very little guidance for the Great Lakes (or other large inland lakes), and no guidance for Pacific Ocean surge analyses.

8. Safety Margins

What types and magnitudes of safety margins (if any) will be acceptable?

- a. For instance, a 20% margin of error is cited for SLOSH, and this has been typically applied to new plant designs in COLAs and ESPs.
- b. NUREG/CR-7134 presents examples where various margins related to parameter uncertainty, modeling uncertainty, freeboard, climate change, and sea level rise; however, these add up to considerable margins that existing plants are unlikely to meet. These conservatisms may be prudent for new construction, but applying them to existing plants may be overly burdensome.
- c. If detailed numerical modeling is performed will it be necessary to apply, for example, a 20% margin of error like SLOSH analyses, where SLOSH is less detailed model?

Comments related to Enclosure 2, tsunami evaluations:

1. Lessons-Learned from Fukushima Dai-ichi nuclear tsunami –caused disaster

The DRAFT ISG is based primarily on the guidance provided by NUREG/CR-6966 (2009), promulgated after the 2004 Sumatra earthquake and tsunami event. There are no references, or revised guidance, based on studies or “lessons-learned” following the

Fukushima Dai-ichi nuclear tsunami –caused disaster. Will there potentially be revisions to the guidance based on emerging lessons-learned on Fukushima Tsunami disaster?

2. Incomplete/incorrect discussion of tsunami analyses

Draft Enclosure 2, Section 4.2, 4.3, 4.4, 4.5 and 4.6 are simply copied from Enclosure 1, Section 5.3, 5.4, 5.5, 5.6 and 5.7. These sections should be customized for tsunami analyses.

For example, Section 4.2 presents wind wave runup equations, not tsunami equations. In Section 4.3, the proper tsunami wave numerical programs are not cited. SLOSH is not an appropriate model for tsunami analyses. ADCIRC (and similar models that couple water body and planetary boundary layers) may be adequate with the proper boundary wave input; however, other programs such as FUNWAVE, COULWAVE, MOST, TSUNAMI (and others) are specifically created for analysis of tsunami..

3. Paleo-tsunami Investigations

Enclosure 2, Section 3.3 states, “Any relevant paleo-tsunami evidence should be addressed.” The ISG, and NUREG/CR-6966, do not clearly indicate if site-specific paleo-tsunami investigations are required, or if only a review of previous regional scientific studies required?

Feel free to share our comments with other stakeholders. If you have any questions, please contact us.

Sincerely,

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