

**NRCREP Resource**

**From:** Vicki.Hull@dom.com  
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**Subject:** Comments on DG-1175  
**Attachments:** Comments on DG-1175.doc

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Although they are late, here are Dominion's comments. Sorry for the inconvenience.

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73FR 30422  
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(See attached file: Comments on DG-1175.doc)

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SONSI Review Complete  
Template = ADM-013

F-RIDS = ADM-03  
Call = Chung H. Ng (ChNI)

Comments on DG-1175 "Seismic Qualification of Electric and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants." (Update to RG 1.100)

DUE to Leslie Kass, [lck@nei.org](mailto:lck@nei.org), by July 1, 2008.

Name of individual(s) providing comments: Divakar Bhargava (Dominion)

| DG section/page number   | Comment, including basis   | Proposed revision or alternative  |
|--|--|---|
| Title, General Comment, also see pages 5 through 8.  | <p>The draft RG title and scope have been changed to include functional qualification of active mechanical equipment, as compared to the two previous revisions of RG 1.100 which only discussed seismic qualification of electrical and mechanical equipment. This change is because the RG now endorses ASME QME-1-1994, which covers functional qualification of active mechanical equipment. The main discussion on pages 5 through 8 of the DG is for active, motor-operated valves. It is noted that RG 1.148 also discusses functional specification of active valves and primarily endorses ANSI N278.1-1975. Although the ANSI standard by itself does not provided complete assurance of operability, there is an overlap between DG-1175 and RG 1.148 for functional qualification of active valves. It is recommended that functional qualification of active mechanical components (which have no direct bearing on seismic qualification) should be discussed in a revision to RG 1.148. RG 1.100 should provide guidance just for seismic qualification of electric and mechanical equipment.</p> | <p>Either remove functional qualification of active mechanical equipment from this DG or reconcile the overlap between DG-1175 and RG 1.148 in another manner.</p>  |
| <p>1/4 (4<sup>th</sup> para from top- "Large...")<br/>                     Also C. 1.1.1 b/9<br/>                     Also C. 1.1.2 b, c /11</p> | <p>In the SERs that NRC sent to the USI A-46 plants in the past, it was stated that older vintage plants could use the experience-based SQUG-GIP method for seismic verification of new and replacement equipment provided they revised their licensing bases. Many older plants are currently using the SQUG-GIP method. The DG is silent on this.</p>  | <p>Add a sentence at the end of this paragraph to this effect: "However, older vintage plants can, with a few exceptions, use the experience-based SQUG-GIP method for seismic verification of new and replacement equipment provided they revise their licensing bases via safety evaluations". Alternatively, reconcile the fact in the DG that NRC has previously accepted earthquake experience-based qualification of new/replacement equipment in older plants.</p> |

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|---|---|---|
| <p>1/5 (3<sup>rd</sup> para from top - "Another NRC ...")</p> <p>Also, C. 1.1.1g/10</p> <p>Also, C. 1.2.1g/14</p> | <p>The high frequency content, which exists in most existing tests, whether inadvertent or deliberate, will still be imparted to an item on equipment on the shake table. Therefore, high frequency vibratory motions generated on a shake table in an inadvertent manner may not be inconsequential. The DG should clarify that such inadvertent motions can be credited provided they are shown to meet stationarity requirements per Appendix B of IEEE Std 344-1987 or 2004 (when one of these versions of the IEEE Standard is the plant's commitment). However, in IEEE Std 344-1975, there was no requirement for stationarity check. For example, previous seismic shake tests for BWR Mark II and III plants (committed to the 1975 version of the standard) were frequently utilized to qualify equipment for the combined seismic and hydrodynamic loads with high frequency content up to 100 Hz and were accepted by the NRC staff in SQRT audits.</p> | <p>Revise this section appropriately, such as adding a sentence to this effect: "When the existing seismic tests contain inadvertent high frequency motions due to ball joints and kinematics linkages, such tests shall be shown to meet the stationarity requirements discussed in Appendix B of IEEE Std. 344-2004."</p> |
| <p>1/5 (2<sup>nd</sup> para from top - "The NRC..."):</p> <p>Also, C. 1.1.1 i/10</p> <p>Also, C. 1.2.1 j/14</p>   | <p>In the last sentence of this paragraph, it says that the test sample shall be subjected to simulated OBE and SSE vibrations per IEEE Std. 344-2004. In section C.1.1.1i (p. 10) two alternatives for the number of tests/cyclic considerations are provided. However, another alternative when OBE is defined as 1/3 or less of SSE is to use two SSE events with 10 maximum stress cycles per event in accordance with SRP 3.7.3 (p. 4), March 2007. This alternative should also be listed.</p>  | <p>Revise these sections to include an option that 2 SSE tests, as an alternative to 5 OBE and 1 SSE are also acceptable when the OBE is designated as 1/3 or less of the SSE.</p>  |
| <p>C. 1.1.1 j/10</p>  | <p>The IEEE Std. 344-2005 has a section on damping. While the damping values in RG 1.61 can be used when qualification is by analysis, there should be no specific requirement on damping values to be used for shake-testing, only that the equipment damping at which the RRS is developed should be the same or lower than the TRS damping value.</p>  | <p>Clarify the statement in this section that for qualification by shake-table testing, RRS with any reasonable damping value (such as 5% of critical damping) can be used provided that the TRS is also plotted at the same damping value or a higher damping value.</p>   |
| <p>General comment</p>  | <p>There is no discussion of required margins for seismic testing, except in Section C1.1.2d re. test experience spectra. A 10% margin is recommended in IEEE Std 323. Also, SRM on SECY-93-087 states that the Commission approved the use of a 1.67 margin over SSE for a margin type assessment. The intent of these margins should be clarified, particularly for seismic testing.</p>  | <p>The required margins and/or the intent of margins in TRS vs. RRS over the applicable frequency range should be discussed in the RG so that there is no confusion by the practitioners.</p>   |