Duran-Hernandez, Doris

Subject: FW: Dominion Response Re: Draft Regulatory Guide DG-1337
Attachments: GL16-017_ResponseDraftRGDG-1337_Ltr&AttOnly.pdf

From: Vicki Hull (Generation - 6) [mailto:vicki.hull@dom.com]
Sent: Friday, February 24, 2017 8:18 AM
To: Bladey, Cindy <Cindy.Bladey@nrc.gov>
Subject: [External_Sender] Dominion Response Re: Draft Regulatory Guide DG-1337

Cindy –

Attached are Dominion's comments to the above subject.

Thanks,
Vicki

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81FR76633
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Add= E. O'Donnell (exo)

Dominion Resources Services, Inc.
Innsbrook Technical Center
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Dominion®

February 23, 2017

Ms. Cindy Bladey
Office of Administration
Mail Stop: OWFN-12H08
U.S. Nuclear Regulatory Commission
Washington, DC 20555–0001

GL 16-017

Subject: Comments on Draft Regulatory Guide (RG) DG-1337, *"Restart of a Nuclear Power Plant Shut Down by a Seismic Event"* (*Federal Register* 81FR76633, dated November 3, 2016, Docket ID NRC-2016-0224)

This letter is being submitted in response to the U.S. Nuclear Regulatory Commission's (NRC's) request for comments concerning the subject draft Regulatory Guide (RG) DG-1337, *"Restart of a Nuclear Power Plant Shut Down by a Seismic Event,"* published in the *Federal Register* (i.e., 81FR76633, dated November 3, 2016).

This draft RG is the proposed Revision 1 to Regulatory Guide (RG) 1.167 (same title). DG-1337 describes the process, inspections, and tests that the NRC considers acceptable to demonstrate that a nuclear power plant is safe for restarting after a shutdown caused by a seismic event. This draft RG also describes long-term evaluations to provide evidence that the power plant will continue to operate safely.

Dominion appreciates the opportunity to comment on the subject draft RG and offers the attached comments for consideration by the NRC. Dominion also supports the comments submitted by the Nuclear Energy Institute (NEI) on behalf of the industry related to this draft RG.

If you have any questions or require additional information, please contact Mr. Gary D. Miller at (804) 273-2771.

Respectfully,

Tom Huber
Director, Nuclear Regulatory Affairs
Dominion Resources Services, Inc. for
Virginia Electric and Power Company and
Dominion Nuclear Connecticut, Inc.

Attachment

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1. **Comments on Section C.2 of DG-1337, *"Exceptions and Clarifications to Section 7 of ANS/ANSI 2.23-2016":***

   a. Exception to Section 7.3 Recommended post-earthquake action levels:

   We recommend that the proposed exception to Section 7.3 be deleted based on the rationale provided below including the experience in 2011 at the North Anna plant. The sample analysis is redundant when the SSE is exceeded but there is no evidence of damage to either industrial type non-safety related or safety related (SR) systems, structures or components (SSCs). This exception can impose unwarranted burden and hardship on licensees.

   - Under Action Level 1, ANS/ANSI 2.23-2016 provides the requirements for performing focused and expanded inspections and tests, and requires the development and implementation of a seismic evaluation and verification plan for Damage Level (DL) 0 and DL 1. We believe these actions are sufficient.

   - The approach in ANS/ANSI 2.23-2016 is consistent with the observations from a number of nuclear plants that experienced significant beyond-design basis earthquakes that the plant itself is the best indicator of potential damage, not instrument recordings or analyses alone. For the Mineral, Virginia M5.8 earthquake of August 23, 2011, which exceeded the North Anna plant's SSE spectra in certain frequency bands, the licensee was requested by the NRC to perform sample analyses of SSCs prior to restart. These analyses were performed based on the recorded motions; however, in-structure response spectra (ISRS) could not be calculated in the short timeframe prior to re-start. Therefore, approximations were made in some cases. No issues were identified and no safety benefits resulted from these sample analyses. The thorough walkdowns of plant areas and SSCs that showed no significant damage (consistent with the Cumulative Absolute Velocity (CAV) for this event) and the detailed functional and surveillance tests that were performed led to the

conclusion that North Anna plant was safe for restart. Accordingly, we do not believe that analytical evaluation of a sample of SSCs is technically warranted or particularly meaningful in the absence of significant damage. This is supported by the experience-based conclusion that the types of SSCs that are amenable to analytical evaluation are typically the least seismically vulnerable SSCs in a nuclear plant. Extensive evaluations and functional testing of equipment performed at North Anna following the 2011 Mineral, Virginia earthquake (even though thorough inspections did not reveal any damage) ensured that SSCs were capable of performing their required design basis functions. This is further evidenced by the fact that North Anna continues to operate well five and a half years after the Mineral event.

- DG-1337 refers to potential unobserved latent damage and its safety impact on continued operation of SSCs. The potential latent damage issue has been thoroughly reviewed at nuclear plants in several past earthquakes, such as the Niigata-Chuetsu-Oki earthquake of 2007 for the Kashiwazaki-Kariwa plant and the Mineral, Virginia earthquake of 2011 for the North Anna plant, where the DLs were 0 or 1. No evidence of latent damage was found at these plants. (Refer to Dominion letter dated October 18, 2011, Serial No. 11-577A, for a discussion of the North Anna review for latent/hidden damage. [ADAMS ACCESSION No. ML11292A151])

- The CAV threshold of 0.16 g-sec recommended in ANS/ANSI 2.23-2016 for a Safe Shutdown Earthquake (SSE) is the same as that for an Operating Basis Earthquake (OBE), which is highly conservative. For earthquakes that have small strong-motion durations, the CAV is expected to be small. If the CAV is above the threshold, the SSE spectra can be easily exceeded, as was the case for the Mineral, Virginia earthquake of 2011; however, the DL can still be 0 or 1 and Action Level 1 is considered appropriate.

- The industry effort in response to NRC Fukushima Near-Term Task Force (NTTF) Recommendations 2.1 (for re-evaluated seismic hazard) and 2.3, which included plant walkdowns, expedited seismic evaluation programs (ESEPs) and seismic PRAs, as well as past initiatives including Individual Plant Examination of External Events (IPEEE) and Unresolved Safety Issue (USI) A-46, "*Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors,*" demonstrate that safe-shutdown SSCs have sufficient seismic capacities to withstand accelerations corresponding to SSE and beyond.

- The last sentence in this section states that "Because plant configurations do not rapidly change, licensees should consider developing a list of these SSCs in advance of an event." This requirement is met in Section 5.4 of ANS/ANSI 2.23-2016; consequently, this sentence should be deleted.

2. **Section C.2, *"Exceptions and Clarifications to Section 7 of ANS/ANSI 2.23-2016,"* specifies the following:**

   b. Documentation

   The references to Section "C.3.a" cited in the two locations in the paragraph above should actually reference "C.2.a" rather than C.3.a. Further, this section is not warranted since, as noted above, it is Dominion's position that Section C.2.a be deleted.

3. **Comments on Section C.3, "Exception to Section 9.5 of ANS/ANSI-2.23-2016"**

   This exception should be deleted. The last sentence in the first paragraph of Section 9.5 of ANS/ANSI-2.23-2016 only refers to not performing an explicit evaluation of new/replacement SSCs to the observed spectra if the SSCs involved have low safety-significance and do not pose a significant seismic risk, which may be evident from a seismic PRA. Each plant's licensing basis requirements, such as safety analyses reports (e.g., FSARs), require new or replacement safety-related equipment to be assessed for the SSE.

4. **Comments on Section C.4, "Clarification Regarding Initial and Short-Term Evaluations"**

   This exception is unnecessary. 10 CFR 50, Appendix B, Paragraph XVI, "Corrective Actions," already requires the need to understand the cause and extent of condition of a Reactor Trip prior to startup. The reason this was not included in the ANSI/ANS Standard was because this was considered to be redundant to existing regulations.

5. **Administrative Comments**

   Paragraph 3 of Section C.1 and the first sentence of Section C.2 on Page 5 of the DG contain a typographical error. Table 7-1 should simply be referred to as "Table 1 – Action level matrix", as noted on page 25 of the ANS/ASME Standard.

6. **Regulatory Burden**

In should also be noted that there is a significant burden and cost to licensees due primarily to the exception taken in Section C.2.a. of DG-1337. While no functional damage was identified for any safety related SSCs at North Anna as a result of the 2011 Mineral, Virginia earthquake, the: (a) sampling analyses performed prior to restart, (b) more detailed sampling analyses performed after restart (i.e., part of the long term

required actions), and (c) associated NRC inspection and review fees, resulted in the following estimated incurred costs:

(a) Prior to restart: In the two and a half months prior to restart, more than 100,000 man-hours and $21 million were expended in performing post-earthquake SSC inspection, testing, & evaluation. A significant portion of these costs were for supporting analyses.

(b) Long term actions: The estimated costs associated with the long-term analyses of SSCs, including developing In-structure Response Spectra (ISRS), was approximately $2.0 million.

(c) NRC review fees: The estimated NRC fees associated with the NRC's North Anna earthquake review and inspection efforts exceeded $1.6 million. It should also be noted this value does not include the significant NRC review fees associated with the related Confirmatory Action Letter close-out effort that was completed on December 24, 2015.

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February 23, 2017

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