

SUNSI Review Complete
Template = ADM-013
E-RIDS=ADM-03
ADD: Jazel Parks, Edward
O'Donnell

As of: 8/14/19 5:46 AM
Received: August 13, 2019
Status: Pending_Post
Tracking No. 1k3-9bl8-aliv
Comments Due: August 13, 2019
Submission Type: Web

PUBLIC SUBMISSION

COMMENT (2)
PUBLICATION DATE:
6/17/2019
CITATION 84 FR 27809

Docket: NRC-2019-0111

Pre-Earthquake Planning, Shutdown, and Restart of a Nuclear Power Plant Following an Earthquake

Comment On: NRC-2019-0111-0001

Pre-Earthquake Planning, Shutdown, and Restart of a Nuclear Power Plant Following an Earthquake

Document: NRC-2019-0111-DRAFT-0002

Comment on FR Doc # 2019-12556

Submitter Information

Name: Frances Pimentel

Submitter's Representative: Allison Borst

Organization: Nuclear Energy Institute

General Comment

See attached file(s)

Attachments

08-13-2019_NRC_Industry Comments on NRC DG-1337

FRANCES PIMENTEL

Senior Project Manager, Engineering and Risk

1201 F Street, NW, Suite 1100
Washington, DC 20004
P: 202.739.8132
fap@nei.org



August 13, 2019

Office of Administration
Mail Stop: TWFN-7-A60M,
U.S. Nuclear Regulatory Commission,
Washington, DC 20555-0001
ATTN: Program Management, Announcements and Editing Staff

Submitted via Regulations.gov

Subject: Request for Public Comment on Draft Regulatory Guide DG-1337, "*Pre-Earthquake Planning, Shutdown, and Restart of a Nuclear Power Plant Following an Earthquake*" (*Federal Register* 84FR27809, dated June 14, 2019, Docket ID NRC-2019-0111)

Project Number: 689

To Program Management, Announcements and Editing Staff:

The Nuclear Energy Institute (NEI) ¹, on behalf of its members, submits the following comments on the subject Draft Guidance (DG)-1337, "*Pre-Earthquake Planning, Shutdown, and Restart of a Nuclear Power Plant Following an Earthquake*." The NRC draft regulatory guide endorses ANS/ANSI-2.23-2016, with an exception relating to Post-Earthquake Action Levels Recommended in ANSI/ANS-2.23-2016, Section 7.3.

The NRC's Draft Guidance takes exception to a key aspect of ANS/ANSI-2.23-2016 in a manner that would involve significant efforts by licensees, and is not technically warranted or meaningful in the absence of significant damage. Further, operational experience for the 2011 Mineral, Virginia earthquake has demonstrated that the additional analysis involved by the proposed exception ultimately provided little or no contribution to safe plant restart. The regulatory burden associated with this earthquake was approximately \$25 million and 100,000 man-hours.²

Most recently, 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 walk-downs,

¹ The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

² ML17061A192

August 13, 2019

Page 2

expedited seismic evaluation programs (ESEPs) and seismic probabilistic risk assessments (PRAs), demonstrated that safe-shutdown SSCs have sufficient seismic capacities to withstand accelerations corresponding to SSE and beyond.

The approach provided in ANS/ANSI-2.23-2016 for evaluating plant readiness to restart in the event that the SSE criterion is exceeded in the absence of damage, provides the most balanced, reliable and practical method available. We recommend that DG-1337 be revised to endorse ANS/ANSI-2.23-2016 without exception.

The attachment provides additional comments on DG-1337 in support of this recommendation. These comments were developed by subject matter experts from utilities' operating nuclear power plants and other organizations, representing a substantial body of industry technical expertise. The industry would welcome a public meeting to further discuss these comments.

We appreciate the staff's consideration of these comments and trust that they will be found useful and informative as you proceed to finalize this guidance. We would be pleased to answer any comments or questions you might have on the contents of this letter. I may be contacted at fap@nei.org or 202-739-8132.

Sincerely,

A handwritten signature in cursive script that reads "Frances Pimentel". The ink is dark and the signature is fluid, with a large initial 'F'.

Frances Pimentel

Attachment

c: Thomas Weaver, RES/DE/SGSEB, NRC
Vladmir Graizer, RES/DE/SGSEB
Edward O'Donnell, RES/DE/RGGIB, NRC

Attachment 1

NEI Member Comments on DG-1337: Pre-Earthquake Planning, Shutdown, and Restart of a Nuclear Power Plant Following an Earthquake

Section	Comment/Basis	Recommendation
B. Discussion - Background	There is a paragraph that discusses the background of why ANSI/ANS-2.23-2016 is being endorsed by the RG; however, there is not a background discussion on why ANSI/ANS-2.10-2017 is also endorsed by the RG.	Include in the background section a discussion on why ANSI/ANS-2.10-2017 is also endorsed by the RG.
C.1 Exception to Post-Earthquake Action Levels Recommended in ANSI-2.23-2016, Section 7.3	<p>As currently drafted, this section takes exception to Table 1- "Action level matrix" in Section 7 of ANSI/ANS-2.23-2016 where the licensee is directed to follow Action Level 1 (the lowest Action Level) when the Damage Level is 1 or 0 and the Earthquake Level exceeds the SSE. We recommend that the proposed exception to Section 7.3 of ANSI/ANS-2.23-2016 be deleted based on the following:</p> <ol style="list-style-type: none"> 1. There have been numerous seismic industry initiatives that demonstrated that SSCs have sufficient seismic capacities to withstand accelerations associated with the SSE and higher. Those initiatives include: <ul style="list-style-type: none"> • The industry effort in response to NRC Fukushima Near-Term Task Force (NTTF) Recommendations 2.1 Seismic and 2.3 Seismic, which included plant walk-downs, expedited seismic evaluation programs (ESEPs) and seismic probabilistic risk assessments (PRAs). On July 3, 2019, the NRC issued "Treatment of Reevaluated Seismic Hazard Information Provided under Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident" (ML19140A307). In that letter the NRC states, "...assessments remain valid based on the demonstrated inherent capacity of SSCs..." In binning the sites, Category 1 is described as "<i>Corresponds to sites where no additional regulatory action is warranted. This category includes sites that where the reevaluated seismic hazard is bounded by the current design basis, or sites where the licensee has demonstrated that existing seismic capacity and plant procedures will address the unbounded reevaluated hazard. This means that both licensees and staff are finished with the 50.54(f) letter seismic reevaluation assessments and backfit decisions for these sites. There are currently 47 sites in this category.</i>" Under NTTF 2.1, capacities of SSCs up to at least the ground motion response spectra (GMRS) (and the associated in-structure response spectra (ISRS)) have been determined to be seismically adequate. • 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," results demonstrated that safe shutdown Structures, Systems, and Components (SSCs) are capable of withstanding accelerations in excess of SSE 	The proposed exception to Section 7.3 should be deleted based on the points discussed under comment / basis. Additionally, this exception would impose significant burden on licensees without adequate justification.

Section	Comment/Basis	Recommendation
	<p>loading.</p> <ul style="list-style-type: none"> • Seismic margin assessments such as documented in "A Methodology for Assessment of Nuclear Power Plant Seismic Margin," EPRI NP-6041-SL <p>2. Evaluation of the focused visual inspections and tests of the accessible areas performed by engineering prior to restart, by its definition, determines the significance of the results, including comparison with acceptance criteria and any previous results (trending), and would be applicable to any inaccessible areas within a reasonable proximity. There is no apparent technical basis for concluding that an additional evaluation program following restart would provide a meaningful increment in safety assurance. Therefore, no formal technical evaluations or involved technical justifications for inaccessible areas are justified after restart since the evaluation of the accessible areas would not have identified these areas as being susceptible to damage.</p> <p>3. 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 walk-downs 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) demonstrated 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 eight years after the Mineral</p>	

Section	Comment/Basis	Recommendation
	<p>event.</p> <p>4. 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 damage levels (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. 11-577 A, for a discussion of the North Anna review for latent/hidden damage. [ADAMS ACCESSION No. ML 11292A151])</p> <p>5. 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.</p> <p>6. New technology plants that are required to meet this version of the Reg Guide are generally of a Passive (or Fail Safe) design. Requiring this additional analysis following restart is unwarranted based on margins included in those designs.</p> <p>7. The sentence in this section that states, "Because plant configurations do not rapidly change, licensees should consider developing a list of these SSCs in advance of an event," should be deleted since this requirement is met in Section 5.4 of ANS/ANSI 2.23- 2016.</p> <p>In summary,-ANS/ANSI 2.23-2016, "Nuclear Power Plant Response to an Earthquake," provides adequate justification for performing focused visual inspections and tests only for Damage Level (DL) 0 and DL 1 - Action Level (AL) 1. Additionally, Table 1 of ANSI/ANS-2.23-2016 provides adequate guidance for all Action/Earthquake/Damage Levels.</p>	
References	Reference 13 is not the latest version of the EPRI guidance document and is no longer available from EPRI. It has been superseded by EPRI 3002005284.	Replace with EPRI report 3002005284, dated 2015.