

ENCLOSURE

NONCONCURRENCE 2016-014

NON-CONCURRENCE PROCESS COVER PAGE

The U.S. Nuclear Regulatory Commission (NRC) strives to establish and maintain an environment that encourages all employees to promptly raise concerns and differing views without fear of reprisal and to promote methods for raising concerns that will enhance a strong safety culture and support the agency's mission.

Employees are expected to discuss their views and concerns with their immediate supervisors on a regular, ongoing basis. If informal discussions do not resolve concerns, employees have various mechanisms for expressing and having their concerns and differing views heard and considered by management.

Management Directive, MD 10.158, "NRC Non-Concurrence Process," describes the Non-Concurrence Process (NCP), <http://nrcweb.nrc.gov:8600/policy/directives/catalog/md10.158.pdf>.

The NCP allows employees to document their differing views and concerns early in the decision-making process, have them responded to (if requested), and attach them to proposed documents moving through the management approval chain to support the decision-making process.

NRC Form 757, "Non-Concurrence Process" is used to document the process.

Section A of the form includes the personal opinions, views, and concerns of a non-concurring NRC employee.

Section B of the form includes the personal opinions and views of the non-concurring employee's immediate supervisor.

Section C of the form includes the agency's evaluation of the concerns and the agency's final position and outcome.

NOTE: Content in Sections A and B reflects personal opinions and views and does not represent official factual representation of the issues, nor official rationale for the agency decision. Section C includes the agency's official position on the facts, issues, and rationale for the final decision.

At the end of the process, the non-concurring employee(s):

- Concurred
- Continued to non-concur
- Agreed with some of the changes to the subject document, but continued to non-concur
- Requested that the process be discontinued

- The non-concurring employee(s) requested that the record be non-public.
- The non-concurring employee(s) requested that the record be public.

- This record is non-public and for official use only.
- This record has been reviewed and approved for public dissemination.



NON-CONCURRENCE PROCESS

NCP-2016-014
NCP PM 10/18/16

SECTION A - TO BE COMPLETED BY NON-CONCURRING EMPLOYEE

TITLE OF SUBJECT DOCUMENT Interim Staff Guidance JLD-ISG-2012-01, Draft Revision 2; Compliance with Order EA-12-049, Order Mo	ADAMS ACCESSION NO. ML16277A617
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DOCUMENT SIGNER Mike Franovich	SIGNER TELEPHONE NO. (301) 415-2239
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NON-CONCURRING EMPLOYEE'S SUPERVISOR
Joseph Gütter; CJ Fong

TITLE Director; Team Leader	ORGANIZATION NRR/DRA; NRR/DRA/APLA/RILIT
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I WOULD LIKE MY NON-CONCURRENCE CONSIDERED AND WOULD LIKE A WRITTEN EVALUATION IN SECTION B AND C.
 I WOULD LIKE MY NON-CONCURRENCE CONSIDERED, BUT A WRITTEN EVALUATION IN SECTIONS B AND C IS NOT NECESSARY.

WHEN THE PROCESS IS COMPLETE, I WOULD LIKE THE NCP FORM:
 PUBLIC
 NON-PUBLIC

REASONS FOR THE NON-CONCURRENCE, POTENTIAL IMPACT ON MISSION, AND THE PROPOSED ALTERNATIVES
(use continuation pages or attach Word document)

JLD-ISG-2012-01, Rev. 2 Draft, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" endorses NEI 12-06, Revision 3, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Appendix II, "Mitigating Strategies Assessment [MSA] for New Seismic Hazard Information" without addressing fundamental issues with the logic associated with the methods proposing the use of risk insights in Section H.4.5, "Path 5: GMRS >2X SSE."

Specifically, NEI 12-06, Appendix H, proposes to provide guidance for performing an MSA to "Confirm FLEX strategies can be implemented considering the impacts of the MSSHI [Mitigating Strategies Seismic Hazard Information]; or Develop and implement modifications necessary to ensure the FLEX strategies are able to address the MSSHI; or Develop and implement AMS [Alternative Mitigating Strategies] that are able to address the MSSHI." However, the risk criteria proposed do not provide a meaningful indication of whether the plant is reasonably protected against the MSSHI. Order EA-12-049, SRM-COMSECY-14-0037, and the forthcoming mitigation of beyond-design-basis events (MBDBE) rulemaking define the requirement that plants have reasonable protection against the MSSHI and indicate that the Commission has determined that this requirement is necessary to ensure adequate protection.

The specific issues and a proposed alternative are detailed in the attached file. The two issues discussed include:
 Issue 1) NEI 12-06, Appendix H proposes to use a risk-based screening value of SCDF and SLERF less than or equal to 5E-5 and 5E-6 per year, respectively, in lieu of evaluating whether there is reasonable protection for the associated mitigating strategies equipment from external events.
 Issue 2) NEI 12-06, Appendix II proposes to use a partitioned risk objective based on RG 1.174 acceptance criteria in lieu of evaluating whether defense-in-depth is maintained, and without calculating the baseline risk or considering the other principles of risk-informed decision-making as recommended in RG 1.174.

SIGNATURE <i>Stacey L. Rosenberg</i> <i>Sara Lyons via email</i> <i>10/18/16</i>	DATE 10-18-16
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Non-Concurrence, Section A Continuation

REVISION TO JLD-ISG-2012-01

Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events, Interim Staff Guidance, Draft Revision 2

NEI 12-06, Revision 3, Appendix H includes two paths for assessing whether the FLEX strategies can be implemented following a MSSHI earthquake, or if a suitable alternative which can be implemented following a MSSHI earthquake is available. The first path describes a "Risk-Informed Assessment" and the second path describes a "Deterministic Assessment" (see Figure H.4 in NEI 12-06, Revision 3).

The first step in the risk-informed assessment screens plants with a total SCDF $\leq 5E-5$ /year and SLERF $\leq 5E-6$ /year out from further consideration (see **Issue 1**). For plants that cannot meet the initial screen, the licensee can use their SPRA to determine the Δ SCDF-ELAP/LUHS and Δ SLERF-ELAP/LUHS associated with keeping their current mitigating strategies SSCs or improving them such that each mitigating strategy SSC can achieve $C_{10\%}$. If the Δ SCDF-ELAP/LUHS and Δ SLERF-ELAP/LUHS values are "small" per RG 1.174 guidance, no further consideration is needed (see **Issue 2a**).

The deterministic assessment leverages work done under ESEP, seismic experience, and other industry efforts to determine whether SSCs required for mitigating strategies have less than or equal to a 10% failure probability ($C_{10\%}$) for the MSSHI GMRS. If not, according to the guidance, the licensee would be able to choose one of two alternatives: 1) the FLEX strategies can be updated to achieve $C_{10\%}$, or 2) the licensee can use their SPRA to determine the Δ SCDF and Δ SLERF associated with keeping their current mitigating strategies SSCs or improving them such that each mitigating strategy SSC can achieve $C_{10\%}$. If the Δ SCDF and Δ SLERF values are "small" per RG 1.174 guidance, no further consideration is needed (see **Issue 2b**).

Issue 1: NEI 12-06, Appendix H proposes to use a risk-based screening value of SCDF and SLERF less than or equal to $5E-5$ and $5E-6$ per year, respectively, in lieu of evaluating whether there is reasonable protection for the associated mitigating strategies equipment from external events.

This screening value does not assess whether the FLEX strategies can be implemented considering the impacts of the MSSHI earthquake, or if a suitable alternative which can be implemented following a MSSHI earthquake is available. Instead, the screening value seems to indicate that plants with SCDF and SLERF $<50\%$ of the subsidiary risk goals do not need to assess whether their mitigating strategies can be implemented following a MSSHI earthquake. This does not appear to be consistent with the agency's actions in response to the lessons learned following Fukushima to address potential low frequency, high consequence events. Similarly, this strategy does not appear to be consistent with the Commission's PRA Policy Statement in that it is risk-based and does not complement the NRC's deterministic approach

(safety margins and defense-in-depth). It is possible that all Path 4 and Path 5 plants will meet this screen and as a result will not assess their ability to withstand the beyond design basis seismic event. The specific concerns associated with the use of this screening value include:

- a) SCDF/SLERF Screening Value Not Useful Indication of Reasonable Protection for Defense-in-Depth Requirement: The SCDF and SLERF screening values of less than or equal to $5E-5$ and $5E-6$ per year, respectively, do not necessarily indicate that the plant is reasonably protected from the MSSHI earthquake. Consider that the ground motion response spectra (GMRS) of the MSSHI by definition has a mean exceedance frequency between $1E-4$ and $1E-5$ per year, with typical values in the range of $5E-5$ per year for Path 5 plants. If all GMRS earthquakes went directly to core damage, the SCDF contribution would be in the range of $5E-5$ /year. The link between the SCDF/SLERF screening values and their usefulness in evaluating the level of protection of the mitigating strategies equipment is unclear.
- b) Partitioned Risk Objective: The proposed guidance includes several new partitioned risk objectives. The SRM for SECY-89-102 (ML12251A496) discusses the potential need for "partitioned" objectives and states that the staff should bring recommendations on the use of each such subsidiary objective to the Commission in the context of the specific issue and explain its compatibility with the safety goals. If the staff decides to further partition the NRC's subsidiary goals (e.g. $CDF \leq 1E-4$ /year; $LERF \leq 1E-5$), such that $SCDF \leq 5E-5$ /year and $SLERF \leq 5E-6$ /year is allocated to seismic events, it will need to explain the compatibility with the safety goals. Based on currently available information, the allocation of $5E-5$ /year of the overall CDF to seismic events alone does not seem to be justifiable (in light of current estimates for fire CDF, internal events CDF, etc.).
- c) Risk-Based Screening: The proposed screening threshold is based entirely on a SCDF/SLERF result and does not consider the other principles of risk-informed decision making. This is problematic given the Commission's PRA Policy Statement, current practice at the NRC, and the fact that the requirement itself is a defense-in-depth requirement.

Issue 2: NEI 12-06, Appendix H proposes to use partitioned risk objectives which will be evaluated against on RG 1.174 acceptance criteria in lieu of evaluating whether defense-in-depth is maintained, and without calculating the baseline risk or considering the other principles of risk-informed decision-making as recommended in RG 1.174.

- **Issue 2a:** Δ SCDF-ELAP/LUHS and Δ SLERF-ELAP/LUHS associated with keeping current mitigating strategies SSCs or improving them such that each mitigating strategies SSCs can achieve $C_{10\%}$, its relevance to the Region II requirements in RG 1.174, and its ability to act as a surrogate for evaluating whether there is reasonable protection for the associated mitigating strategies equipment from external events is unclear.
- **Issue 2b:** Δ SCDF and Δ SLERF associated with keeping current mitigating strategies SSCs or improving them such that each mitigating strategy SSC can achieve $C_{10\%}$, its relevance to the Region II requirements in RG 1.174, and its ability to act as a surrogate for evaluating

whether there is reasonable protection for the associated mitigating strategies equipment from external events is unclear.

The NEI guidance proposes to use the delta-risk acceptance criteria in RG 1.174 as a surrogate for the defense-in-depth requirement that mitigating strategies equipment is reasonably protected from external events. This is a significant deviation from the intent of RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and does not achieve the goal of evaluating the defense-in-depth requirement at hand. The specific concerns associated with the proposal to use RG 1.174 delta-risk acceptance criteria for this purpose are detailed below:

- a) A small risk impact does not eliminate the need for defense-in-depth requirements. RG 1.174 delta-risk acceptance criteria are intended to evaluate the risk impact of a proposed change to the licensing basis. Risk impact is only one of the five principles of risk-informed decision-making that are described in RG 1.174. The five principles include:
- i. The proposed change meets the current regulations
 - ii. The proposed change is consistent with a defense-in-depth philosophy
 - iii. The proposed change maintains sufficient safety margins
 - iv. When the proposed changes result in an increase in CDF or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement
 - v. The impact of the proposed change should be monitored using performance measurement strategies

These five principles are typically used to support risk-informed decision-making (license amendment requests, relief requests, emergent issues, etc.). However, NEI 12-06 proposes to calculate the delta risk associated with meeting or not meeting the deterministic defense-in-depth requirements to ensure reasonable protection for the associated mitigating strategies equipment from external events and use the results to justify not complying with the defense-in-depth requirement. This logic is fundamentally flawed. Defense-in-depth requirements are expected to have a small impact on risk by definition. Confirming this fact does not help evaluate whether defense-in-depth is maintained, or if the proposed change (not complying with the deterministic requirement) is consistent with a defense-in-depth philosophy. The use of RG 1.174 acceptance criteria for delta SCDF and delta SLERF does not provide a meaningful indication of whether the plant is reasonably protected against the MSSHI earthquake.

- b) The proposal is inconsistent with the delta-risk acceptance guidelines in RG 1.174. Although I maintain that the delta-risk acceptance criteria is not a useful indication of whether a defense-in-depth requirement is met, NEI 12-06 further proposes to use the acceptance criteria from Region II (see Figures 4 and 5 in RG 1.174) without calculating the corresponding baseline risk. The acceptance criteria in RG 1.174 were intended for comparison with a full-scope assessment of the delta-risk metric and the baseline value, unless the delta-risk is "very small" ($\Delta\text{CDF} \leq 1\text{E-}6/\text{year}$; $\Delta\text{LERF} \leq 1\text{E-}7/\text{year}$). If the delta-risk requirement is determined to be relevant, the "very small" (Region III)

acceptance criteria or an appropriate partition should be met, the total CDF should be presented with the submittal, or an adequate justification for not meeting the guidelines should be presented.

Proposed Alternatives

While mitigating strategies efforts were initially assessed against the SSE, each additional layer of defense is expected to provide some level of protection against the GMRS earthquake. Licensees can gauge their overall level of protection from the GMRS for all credited success paths by extracting risk insights from their SPRAs. This will give a more holistic view than the deterministic requirements by allowing multiple paths to prevent core damage, and also accounting for other factors which will likely be important during a seismic event (human error probabilities, interface issues, etc.).

- a) Assess CCDP at the Level of the MSSHI Earthquake: Industry continues to dedicate significant resources towards the development of SPRAs and to the extent that mitigating strategies equipment is modeled, these SPRAs can be used to gain meaningful insights into the plant's level of protection against MSSHI earthquakes. One potential way to determine whether there is reasonable protection would be by evaluating the conditional core damage probability (CCDP) associated with the GMRS earthquake. If the CCDP was less than a predetermined value that the agency determined met the definition of "reasonable protection" (e.g., 0.15), then the requirement could be considered to be met. This information should be readily available once peer-reviewed SPRAs for each plant are completed.
- b) Develop a Screening Value Which Is Based on Achievement of "Reasonable Protection" Against the MSSHI Earthquake: Considering that the ground motion response spectra (GMRS) of the MSSHI by definition has a mean exceedance frequency between $1E-4$ and $1E-5$ per year, with typical values in the range of $5E-5$ per year for Path 5 plants, a risk threshold similar to what was proposed in NEI 12-06 could be developed. For example, if the minimum mean exceedance frequency is $4E-5$ per year and "reasonable protection" is defined as surviving the earthquake 85% of the time, any plant with a SCDF less than $6E-6$ per year could be screened out. Similarly, if the minimum mean exceedance frequency is $5E-5$ per year and "reasonable protection" is defined as surviving the earthquake 80% of the time, any plant with a SCDF less than $1E-5$ per year could be screened out. This method would be expected to provide less flexibility than the CCDP evaluation proposed in (a) above.

NON-CONCURRENCE PROCESS

NCP-2016-014

SECTION B - TO BE COMPLETED BY NON-CONCURRING EMPLOYEE'S SUPERVISOR

TITLE OF SUBJECT DOCUMENT

JLD-ISG-2012-01, Rev. 2 Draft, Compliance with Order EA-12-049

ADAMS ACCESSION NO.

ML16277A617

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COMMENTS FOR THE NCP REVIEWER TO CONSIDER (use continuation pages or attach Word document)

I appreciate the technical issues that the non-concurring individuals (NCIs) have raised and the professional manner in which they have raised them. The document in question (JLD-ISG-2012, Rev 2) is currently in draft form. I believe that the final version of this document should consider not only the issues raised by the NCIs but should also incorporate feedback from other stakeholders including the ACRS and members of the public. Like most draft documents, there are improvements yet to be made but I do not see a basis for delaying the public comment period. I would prefer that we obtain public feedback without delay so that we can holistically consider the input from the NCIs, ACRS, and the public. Ultimately, this will help the staff produce a high quality final version of the ISG.

My understanding is that the so-called "C10%" approach has been reviewed and accepted by staff with seismic expertise (e.g., this approach has already been approved for Path 4 plants). If that is the case, I believe that risk-informed approaches (regardless of the metric) should be judged on whether they can be shown to offer a similar level of protection. I recommend that NRR solicit technical input from the agency's senior level staff (SLs) on whether the approaches that have been proposed so far (e.g., delta risk, CCDP) are comparable (even if not mathematically equivalent) to the C10% approach.

SIGNATURE



DATE

10/19/16

NON-CONCURRENCE PROCESS

SECTION B - TO BE COMPLETED BY NON-CONCURRING EMPLOYEE'S SUPERVISOR

TITLE OF SUBJECT DOCUMENT

ADAMS ACCESSION NO.

NAME

TITLE

TELEPHONE NUMBER

ORGANIZATION

COMMENTS FOR THE NCP REVIEWER TO CONSIDER (use continuation pages or attach Word document)

SIGNATURE

SIGNED VIA E-MAIL 10/19/16

DATE

NON-CONCURRENCE PROCESS

NCP-2016-014

SECTION C - TO BE COMPLETED BY NCP COORDINATOR

TITLE OF SUBJECT DOCUMENT

JLD-ISG-2012-01, Rev. 2 Draft, Compliance with Order EA-12-049

ADAMS ACCESSION NO.

ML16295A104

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AGREED UPON SUMMARY OF ISSUES (use continuation pages or attach Word document)

SEE ATTACHED

EVALUATION OF NON-CONCURRENCE AND RATIONALE FOR DECISION (use continuation pages or attach Word document)

SEE ATTACHED

TYPED NAME OF NCP COORDINATOR

Joseph Sebrosky

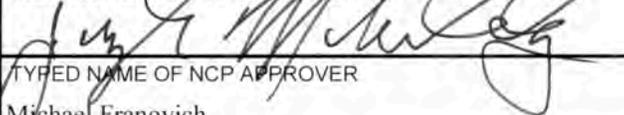
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DATE

11/4/16

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ORGANIZATION

NRR/JLD

SIGNATURE - NCP APPROVER



DATE

11-04-2016

Section C. Document Sponsor Response – NCP-2016-014

Background

One of the primary issues being addressed by the pending Mitigation of Beyond-Design-Basis Events (MBDBE) rulemaking is treatment of the reevaluated seismic and flooding hazards within licensee's mitigating strategies. This issue has been particularly challenging because the mitigating strategies were being developed and implemented under Order EA-12-049 before information was available from the hazard reevaluations and before decisions had been made on how the flooding and seismic reevaluations would be addressed by the rule. The staff described these issues and provided recommendations to the Commission on how to integrate these related activities in COMSECY-14-0037, "Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards" (ADAMS Accession No. ML14238A616). As part of its response to the staff requirements memorandum (SRM) to COMSECY-14-0037 (ADAMS Accession No. ML 15089A236), the NRC staff has incorporated requirements into the pending MBDBE rulemaking which would require that licensees address reevaluated flooding and seismic hazards in their mitigating strategies.

The issues raised in the non-concurrence relate to proposed guidance for meeting these requirements, and specifically with guidance associated with addressing reevaluated seismic hazards within the mitigating strategies using risk-informed approaches. The subject guidance is described in draft Japan Lesson-Learned Division (JLD) interim staff guidance (ISG) JLD-ISG-2012-01, Revision 2, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events." In draft JLG-ISG-2012-01, the staff is proposing to endorse industry-developed guidance in Nuclear Energy Institute (NEI) document NEI 12-06, "Diverse and Flexible Copies Strategies (FLEX) Implementation Guide," Revision 3. If approved, these guidance documents would allow licensees to use insights from the seismic probabilistic risk assessments (SPRAs) to assess their mitigating strategies against the reevaluated seismic hazard (referred to as "Path 5"). Licensees for nearly one third of the power reactor sites are completing SPRAs in response to the 50.54(f) request for information regarding NRC implementation of Near-Term Task Force Recommendation 2.1. If approved by the NRC, the industry's guidance would enable licensees to leverage these state-of-the-art analyses in the supporting guidance for the forthcoming MBDBE rulemaking. The draft guidance is being issued for public comment and the staff is preparing a final rulemaking package. The staff plans to provide the rulemaking package, including the guidance documents, to the Commission for their consideration in mid-December 2016.

Summary of Concerns

The general concern expressed in the non-concurrence is that the draft revision to JLD-ISG-2012-01 would endorse Appendix H to NEI 12-06, Revision 3. The non-concurrence takes issue with the process the industry has developed in Appendix H for assessing the need for changes to the mitigating strategies developed for Order EA 12-049 based on the reevaluated seismic hazard, and the proposed criteria for judging when changes need not be pursued because they would provide only a small reduction in risk to public health and safety. The non-concurrence asserts that the approach outlined in Appendix H to NEI 12-06 does not provide a meaningful indication of whether the plant is reasonably protected against the reevaluated seismic hazard.

The non-concurrence describes two specific concerns, summarized as:

1. Appendix H to NEI 12-06 proposes to use a risk-based screening value of seismic core damage frequency (SCDF) and seismic large early release frequency (SLERF) less than or equal to $5E-5$ and $5E-6$ per year, respectively, in lieu of evaluating whether there is reasonable protection for the associated mitigating strategies equipment from external events. The non-concurrence discusses concerns related to (a) the screening values defined in Appendix H, (b) the partitioning of risk objectives, and (c) the use of risk-based thresholds without consideration of other risk-informed decision-making principles, such as defense in depth. The concerns raised note that the NEI approach does not appear to be consistent with the Commission's Probabilistic Risk Assessment (PRA) Policy Statement in that it is risk-based and does not complement the NRC's deterministic approach.
2. Appendix H to NEI 12-06 proposes to use a partitioned risk objective based on Regulatory Guide (RG) 1.174 acceptance criteria in lieu of evaluating whether defense in depth is maintained, and without calculating the baseline risk or considering the other principles of risk-informed decision-making recommended in RG 1.174. The non-concurrence discusses specific concerns related to the usefulness of the delta core damage frequency (CDF) and delta large early release frequency (LERF) criteria to measure a plant's ability to respond to the reevaluated hazard, and consistency with the principles of RG 1.174

More detailed discussions of the concerns are provided in Section A. The NRC staff's evaluation of these concerns are provided below. In my view, the non-concurrence has demonstrated a quality of critical thinking that ensures that our actions have a sound, transparent basis and that we are mindful of potential alternatives.

Evaluation of Concern 1

The staff has found that the approach proposed in the MBDBE rulemaking and reflected in the guidance is consistent with the requirements and policies of the Commission, including the recent direction in the SRM for COMSECY-14-0037. The COMSECY dealt primarily with the reevaluated flooding hazard, but there are close parallels with the paths and approaches in the related appendices in NEI 12-06 for alternate mitigating strategies, including risk-informed approaches, for both the flooding and seismic hazards. The proposed alternatives provided in the non-concurrence may likewise provide viable approaches for addressing the capabilities of mitigating strategies during beyond-design-basis seismic events. However, the staff reviewed the Path 5 approach in Appendix H of NEI 12-06, Revision 3, and finds that it enhances capabilities to deal with beyond-design-basis seismic events and defines a reasonable threshold for focusing on potential plant modifications that would provide the greatest benefit for protection of public health and safety in the context of Commission direction on treatment of beyond-design-basis external events.

The SPRAs provide an opportunity to determine where additional risk reduction is at a point of diminishing safety returns. The MBDBE rule is proposed as an adequate protection based rule, or in plain language, a requirement that is necessary to meet the fundamental expectations of the Atomic Energy Act to protect public health and safety as determined by the Commission. There is no precise formula for making an adequate protection determination; rather, the Commission makes such a determination on a case-by-case basis.

For the staff's implementation of Commission direction, several agency documents provide useful benchmarks for risk-levels that may rebut the normal presumption of adequate protection being afforded through compliance with NRC existing requirements. For plant-specific issues, guidance documents such as LIC-504¹, the NRC Standard Review Plan², and anecdotal cases suggest CDF estimates on the order of 1E-3 per reactor year may, when other factors are considered, imply that adequate protection may be in question. In some conditions or situations, if there is minimal defense in depth, CDF estimates on the order of 1E-4 for certain scenarios have been viewed as potential adequate protection issues. In this regard, the NEI proposal to use a threshold at 5E-5 for SCDF is conservative.

If the numerical risk thresholds are taken in isolation, I would agree that such an approach is risk-based and arguably in conflict with the Commission's PRA Policy Statement. On the other hand, the existing mitigating strategies under Order EA-12-049 represent a layer of defense-in-depth capability that was added to U.S. nuclear power plants and bolster existing plant capability to handle external events, including seismic events. That said, these strategies were deterministically developed and will now be assessed against the reevaluated seismic hazard levels. The merger of seismic hazards and safety assessment techniques into the PRA technology framework has created a fusion of scientific and engineering disciplines that has advanced significantly over the past decades. For example, the SPRA construct includes engineering evaluations and margins reviews for fragility of structures, systems, and components (SSCs). Beyond numerical results alone, the expectation for NRC staff is that the agency will review SPRA information, including key underlying assumptions and the outcome of the industry's peer review of each plant-specific SPRA. In this regard, I find the staff's approach to MBDBE seismic Path 5 guidance is risk-informed.

Specific to item (b), the staff does not consider the approach described in the guidance to be a partitioning of the safety goal as described in the non-concurrence. The use of SCDF as a figure of merit for post-Fukushima actions has been conveyed in numerous public meetings and with the Commission³. For the MBDBE rule, the guidance provides criteria to assist in determining when plant modifications would provide only a small benefit. Appendix H cites RG 1.174 criteria for a value of small benefit, but does not otherwise propose the use of RG 1.174 within the regulatory analysis for implementing the pending MBDBE rule. As mentioned in the non-concurrence, the Commission incorporated capabilities to address reevaluated hazards into the MBDBE rulemaking as part of the initial basis for Order EA-12-049 that actions were needed to provide reasonable assurance of adequate protection of public health and safety. The SRM for COMSECY-14-0037 did, however, instruct the staff to provide flexibility and risk-informed approaches in dealing with the reevaluated hazards beyond their incorporation into the MBDBE rulemaking. This Commission direction is consistent with longstanding guidance related to performing analyses for possible plant-specific or generic backfits.

There is clearly a degree of engineering judgement in the staff's findings related to the approaches taken for the MBDBE rulemaking and the associated guidance. Specifically, the

¹ LIC-504, "Integrated Risk-Informed Decision-Making Process for Emergent Issues," May 30, 2014 (ADAMS Accession No. ML14035A143)

² NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Section 19.2, "Review of Risk Information Used To Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance," June 2007 (ADAMS Accession No. ML071700658)

³ U.S. Nuclear Regulatory Commission Commission Briefing on the Status of Near-Term Task Force Recommendation 2 for Seismic Hazard Reevaluations, October 7, 2014 (transcript and presentation materials available at <http://www.nrc.gov/reading-rm/doc-collections/commission/tr/2014/>)

fact that many licensees had already developed and installed mitigation strategies to satisfy Order EA-12-049 requirements using each plant's current licensing basis hazards had to be considered. In this context, the use of a process similar to the safety goal screening process defined in NUREG/BR-0058⁴ to determine when plant modifications do not provide a substantial safety benefit, or provide only a small safety benefit, is seen as an appropriate implementation tool within the guidance and is consistent with the discussion of risk-informed approaches within the MBDBE rulemaking. Of course, the NRC's work in this area has consistently been guided by the NRC's Safety Goals or subsidiary goals, such as CDF and LERF, but not in isolation of other factors, such as operating experience and past studies. Recent operating experience includes post-earthquake reviews of plant capacity to withstand beyond-design-basis earthquake conditions in Japan and the United States that demonstrated the robust seismic capacity of nuclear plants. Industry and regulators have independently assessed major events where plants experienced very high levels of ground shaking that exceeded the plant's seismic design-basis earthquake motion. These notable events include the 2007 Niigataken Chūetsu-Oki earthquake impact on the Kashiwazaki-Kariwa nuclear plant's seven units, the 2011 Great Tōhoku earthquake impact on the Onagawa nuclear station, and the 2011 Mineral, Virginia earthquake impact on the two units at the North Anna power station. These nuclear power plants incurred minimal damage to safety-related SSCs from these earthquakes.

In addition, other ongoing assessments of mitigating strategies helped shape the staff's view that Path 5 of Appendix H to NEI-12-06 is sufficient for purposes of addressing the forthcoming MBDBE rule. Specifically, the staff notes that the SPRAs will be used as part of the NRC's assessments and resolution of Recommendation 2.1 for reevaluated seismic hazards and the related determinations on whether additional safety enhancements and potential regulatory actions, beyond those associated with the MBDBE rulemaking, are warranted. In the end, the Commission will assess the staff's proposed approaches and either affirm them through the issuance of the MBDBE rule or direct the staff to revise the rule and/or the guidance.

Conclusion

The staff is following established processes and guidance and will be providing the MBDBE rulemaking package, including the associated guidance documents, to the Commission for their consideration. NRC management has been appropriately involved in the preparation of the draft revision of JLD-ISG-2012-01. The staff believes that the use of a screening process within the guidance to determine when possible plant changes result in no more than a minor safety benefit is consistent with the proposed MBDBE rulemaking, as well as existing NRC regulations and Commission direction. As such, no changes to the draft guidance are warranted, but public comment on the concerns expressed in the non-concurrence are being solicited, along with comments on the actual draft guidance.

Actions Taken

The staff made no changes to the draft of Revision 2 to JLD-ISG-2012-01 in response to Concern 1. However, a question was added to the *Federal Register* notice requesting external stakeholder feedback on these issues.

⁴ NUREG/BR-0058, "Regulatory Analysis Guidelines for the U.S. Nuclear Regulatory Commission" (ADAMS Accession No. ML042820192),

Evaluation of Concern 2

As mentioned in the non-concurrence, RG 1.174 provides guidance for risk-informed licensing actions and includes the five key principles on the basis that existing requirements and practices are being evaluated. Although similar to other NRC regulatory activities involving risk-informed, performance-based approaches, the guidance in RG 1.174 is not used to evaluate the imposition of new requirements on operating reactor licensees. Assessments of new requirements are performed using guidance developed for regulatory analyses and backfit analyses. So although similar in many respects, various risk-informed processes generally differ in the manner by which they demonstrate that the key principles are satisfied. For example, NRR Office Instruction LIC-504 describes the contrast of addressing the key principles for assessing issues versus their use in RG 1.174, which is used for licensee-proposed plant-specific changes to the existing licensing basis for a facility. In summary, in assessing plant-specific licensing basis changes, RG 1.174 provides guidance and acceptance criteria for acceptable increases in risk. In contrast, the assessment process proposed in Appendix H to NEI 12-06 is aimed at reducing seismic risk by identifying potential enhancements to the existing mitigation strategies.

While a value derived from RG 1.174 is used within the screening process in the guidance to help determine when a change need not be pursued because it results in no more than a small benefit in terms of reducing the risks to public health and safety, as discussed above, RG 1.174 is not directly applicable to assessing the imposition of new regulatory requirements or compliance with the requirements included in the pending MBDBE rulemaking. However, the use of the values of $1E-5$ per year delta SCDF and $1E-6$ per year delta SLERF is not only consistent with RG 1.174, but also with other assessments of subsidiary goals for use in regulatory analysis. Specifically, NUREG/BR-0058 recommends terminating further regulatory analysis if the estimated risk reduction from the imposition of a modification is less than $1E-5$ per year delta CDF. Overall, the staff believes that the use of the $1E-5$ per year delta CDF as a screening tool to identify changes that would result in no more than a small benefit is reasonable, although the staff believes that a reference to NUREG/BR-0058 may have been more appropriate than the reference to RG 1.174.

Conclusion

The staff is following established processes and guidance and will be providing the MBDBE rulemaking package, including the associated guidance documents, to the Commission for their consideration. NRC management has been appropriately involved in the preparation of the draft revision of JLD-ISG-2012-01. The staff believes that it is appropriate that the pending MBDBE rulemaking and the associated guidance in Appendix H of NEI 12-06 allow for a risk-informed approach to determine if the value of additional measures to address beyond-design-basis seismic events at a given site have reached a point of diminishing returns by providing only a small reduction in plant risk. As such, no changes to the draft guidance are warranted, but public comment on the concerns expressed in the non-concurrence are being solicited, along with comments on the actual draft guidance.

Actions Taken

The staff made no changes to the draft of Revision 2 to JLD-ISG-2012-01 in response to Concern 2. However, a question was added to the *Federal Register* notice requesting external stakeholder feedback on these issues.

Summary

I appreciate the issues raised by the non-concurring individuals. Their non-concurrence was thoughtfully developed and clearly presented, and it provided valuable insights that informed my review of this important document. I also benefited from meeting with the non-concurring individuals to discuss their concerns in more detail. However, for the reasons discussed above, the NRC staff did not modify draft JLD-ISG-2012-01, Revision 2, in response to the concerns raised by the non-concurrence. Rather, the NRC staff has developed additional questions to be included in the *Federal Register* notice that will publish the draft of Revision 2 to JLD-ISG-2012-01 for public comment. These questions will solicit input on the specific issues raised by the non-concurring individuals, and the non-concurrence and public comments which will be considered by the staff as it finalizes the ISG.