

Draft Responses to Public Comments - ISG-01

Mahendra J. Shah, 8-25-2006

DOE- Comment 1(Lines: 38 to 43, Page: 2)

DOE recommends that the sentence starting at Line 38 be re-phrased as:

"The mean fragility curve for an SSC ITS may be estimated using: (1) probability density functions for controlling parameters in a Monte Carlo analysis; (2) simplified methods outlined in Section 4 of Electric Power Research Institute, TR-103959(Ref. 2); (3) **a method that uses the Conservative Deterministic Failure Margin methodology to determine the 1% probability of failure, and an estimate of the composite logarithmic standard deviation, as described by Kennedy (2001, pp. 44 to 45) and Ravindra (2006, p. 132);** or (4) other methods ...

Response to DOE Comment 1:

NRC regulations grant DOE broad flexibility in choosing a method or methods for preclosure safety analysis of hazards at the geologic repository operations area (GROA). Although NRC staff has stated some example methods in the ISG for estimating the fragility curve, DOE may use any alternative method, provided technical bases for the use of the method, including selection of parameter values and failure criterion, are provided and justified during the licensing process.

No changes were made to the ISG as a result of this comment.

DOE Comment 2 (Lines: 38 to 43, Page: 2)

DOE recommends that the following sentence be added at the end of the sentence on line 43: **"Where appropriate, assessment of fragility for a SSC may be based on fragility values for an identical or similar component as found in the literature."**

Response to DOE Comment 2:

Staff agrees with the commenter that the fragility data for an SSC, developed and documented in databases and used at other facilities, may be used to estimate fragility for the SSCs at the repository, provided the data are shown to be applicable to the repository SSCs.

ISG has been revised to add the following at the end of the sentence on Line 43:

" Estimate of fragility for a SSC may be based on fragility values for an identical or similar component as found in the literature, provided technical bases for the relevance of the data to the SSC under consideration are established."

DOE Comment 3 (Lines: 235 to 237, 240 to 241, Page: 8)

DOE recommends that an explanation be provided to address why the selection of this slope is

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appropriate. This explanation may include for example that this portion of the hazard curve was selected if it was the interval where the dominant contribution to risk arises. Text could be added at the end of the sentence on Line 241 : **"The slope should be selected to focus on the portion of the curve where risk is expected to dominate the convolution."**

Response to DOE Comment 3:

Staff agrees with the commenter that an explanation for the selection of the slope between probabilities of exceedance of 10^{-6} and 10^{-5} should be added in the ISG.

ISG has been revised to add the following at the end of the sentence on Line 241:

" This slope was selected to represent the hazard accurately at probabilities of exceedance values close to the target annual threshold probability of 10^{-6} because this portion of the hazard curve is likely to have a significant contribution to the risk. Additionally, extending the hazard curve linearly beyond the 10^{-6} annual probability, would be conservative because the seismic hazard curve generally has a downward curvature. In the example hazard curve, however, the curve beyond the 10^{-6} annual probability is linear, and thus the hazard beyond the 10^{-6} annual probability is represented accurately."

DOE Comment 4 (Lines: 262 to 264, Page: 11)

DOE suggests replacing the sentence starting on Line 263, with the sentence: **"For the purposes of illustration, a single response frequency of 10-hertz (Hz) is assumed for this evaluation."** DOE also suggests that an explanation why a single frequency is appropriate should be added.

Response to DOE Comment 4:

Staff believes that essence of the comment, with the suggested change to the ISG, is adequately conveyed by the sentences in lines 261 and 263 of the ISG. These sentences state that the evaluation typically would be performed at appropriate structural frequencies based on the dynamic characteristics of the SSC, and that example evaluation is performed at a single frequency of 10 hertz.

A single frequency was chosen in the example for illustration purposes only. As stated in the sentence in line 261, the evaluation typically would have to be performed for a number of structural frequencies of an SSC based on its dynamic characteristics to appropriately assess the probability of failure of an SSC during a seismic event.

No changes were made to the ISG as a result of this comment.

DOE Comment 5 (Lines: 256 to 338, Pages: 11 to12)

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DOE suggests that text be added to include discussion of other, non-seismic, factors that may influence/mitigate the probability of occurrence of the event sequence. At line 262, a sentence should be inserted to read:

"(Other non-seismic factors such as residency times, targeting factors, operational states, and design constraints, which may also influence the probability of occurrence of the complete event sequence, are not considered in this example.)"

Response to DOE Comment 5:

Staff agrees with the commenter that in the example, design constraints, such as the probability of failure of the canister during a potential drop event, are not considered. This is indicated in Lines 275-276 of the ISG, and in the clarifying statement added in the ISG in response to DOE Comment 10. Staff believes that the clarifying statement recognizes that if the canister breach probability (given a drop) is demonstrated to be less than 1.0, the appropriate conditional probability of breach may be factored into the quantification of the event sequence. Therefore, staff believes that a change to the ISG to clarify this factor in determining the probability of occurrence of the event sequences is not necessary.

Other non-seismic factors mentioned in the Comment appear to be related to duration of operations at the proposed Yucca Mountain repository. Staff would need specific information on the Yucca Mountain repository operations and technical bases for determining the values of these factors, to judge if these factors are appropriate and can be used to calculate event sequence probability of occurrence in the preclosure safety analysis. Therefore, staff cannot endorse these factors at this time by revising the ISG, as suggested by the commenter. However, staff will review the use of these factors and their technical bases and make a determination of their acceptability during the potential future review of the License Application for the proposed Yucca Mountain repository.

No changes were made to the ISG as a result of this comment.

DOE Comment 6 (Lines: 308 to 323, Page: 12)

DOE recommends that the assumption made in the computation be clarified, and that each branch in the sequence be addressed in the description. For instance, at the end of the sentence ending on Line 310, the text should be expanded to mention the other branches:

"Tracing Sequence 3 across the event tree shown Figure B-1, this sequence also includes the STR-SHWL success branch and the assumed failure of the canister (CANIS-BRCH) ..."

Additional text on Lines 310 to 323 should include: "... **the STR-SHWL success probability is the complement of the fragility of the failure branch ...**" and "...Therefore, the combined fragility of the **three** systems in the event sequence can be obtained by ..."

Response to DOE Comment 6:

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Staff agrees with the commenter that the Event Sequence 3, as shown in Figure B-1, implies that the concrete shear wall provides a confinement barrier to the release of radioactive materials before they pass through the HVAC system. However, for the illustration purpose only, in the example, it was assumed that if the HVAC duct anchor system fails, all of the radioactive materials released due to the canister breach would be discharged through the HVAC system. To clarify this assumption, the ISG has been revised as follows:

Add the following at the end of the sentence in Line 309:

“ For simplicity, it is assumed in this example that if the HVAC duct anchor system fails, all of the radioactive materials released due to the potential canister breach would be discharged through the HVAC system, and that the concrete shear wall would be unable to provide a barrier to the release of radioactive materials”.

DOE Comment 7 (Figure B-1, Page: 13):

DOE suggests that the figure be revised for clarity, making the figure consistent with conventions for the construction of event trees in other NRC documents, such as NUREG-2300. The following changes are suggested to Figure B-1:

1. The figure be revised to indicate that the initiating event of the sequence is an earthquake.
2. The figure heading be revised to state the event in terms of success.
3. The missing branch be shown for the event that the crane does not drop the waste form.
4. The probability of canister breach, which has been assumed to be 1.0, be indicated.

Response to DOE Comment 7:

Staff agrees with the suggested change in item number 2 regarding revision of the figure headings and stating the event in terms of success, and has revised the Figure B-1. Staff, however, does not agree with the other suggested changes because the title of the figure identifies the event sequence as initiated by a seismic event. This is also consistent with section 11.2.6.2 of NUREG-2300. Also, adding a success path for the crane not dropping the waste form would be superfluous and not add any value to illustration of the procedure for event sequence probability calculation. The probability of canister breach assumed as 1.0 is stated in section B of Appendix B.

Figure B-1 has been revised as a result of this comment.

DOE Comment 8 (Lines: 218 to 222, Page: 7):

Assuming that the text has broader applicability than just as part of the example, DOE suggests that the sentence starting on Line 220 be deleted from Appendix A, moved to the Discussion

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section on page 1, and inserted into the text at Lines 54 to 63. (Please see next comment for suggested change in the wording of this text).

Response to DOE Comment 8:

Staff agrees with the comment. ISG has been revised as follows:

A. Delete the sentence starting in Line 219 and ending in Line 221, "The technical basis...staff review."

B. Add the following at the end of the sentence on Line 57:

"Technical bases for the development of the SSCs ITS fragility curves should be available for staff review."

DOE Comment 9 (Lines: 220 to 222, Page 7):

Consistent with the prior comment indicating that this text be moved to the Discussion section on page 1. DOE also suggests that the sentence starting at Line 220 be re-phrased to state: "It is necessary in developing seismic fragilities that the **technical basis for the development of the applicable fragility parameters** be available for staff review."

Response to DOE Comment 9:

Staff agrees with the comment regarding moving the text in ISG Lines 219-221 to the Discussion section.

ISG has been revised as shown in staff response to DOE Comment 8. The sentence added in the Discussion section (see staff response to DOE Comment 8) reflects the requirements suggested in the comment.

DOE Comment 10 (Lines: 276 to 277, Page: 11):

DOE recommends adding the following phrase to the end of Line 277: "... **and it is assumed that probability of breach is 1.0 in all cases**". In addition, DOE recommends adding in Figure B-1, "**(Pf = 1.0)**" on the branch indicating potential for breach. DOE also recommends adding text to state that when the probability of a breach (given a drop) is demonstrated to be less than 1.0, the appropriate conditional probability of breach may be factored into the quantification of the event sequence.

Response to DOE Comment 10:

Staff agrees with comment. ISG has been revised to clarify that for the example in Appendix B, it is assumed that the canister probability of failure (given a drop) is 1.0. The comment regarding the use of appropriate conditional probability of canister failure in the event sequence

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probability calculation, has been addressed in response to DOE Comment 5.

ISG has been revised to add the following at the end of the sentence in Line 276:

“It is assumed that the canister probability of failure, given a drop, is 1.0.”

DOE Comment 11 (Lines: 36 to 38, Pages: 1 to 2)

DOE suggests adding the following text in the sentence starting on Line 36:

"As a conservative assessment of probability, the probability of occurrence of an event sequence leading to an SSC ITS failure, or seismic performance, **can be** determined by.. .

Response to DOE Comment 11:

Staff agrees with the comment. ISG has been revised to add the following sentence in Line 36:

“As a conservative assessment of the probability of occurrence of an event sequence, a single SSC ITS may be considered, instead of all SSCs ITS in the event sequence .”

DOE Comment 12 (Entire ISG):

DOE suggests that a brief statement be added stating that computations can also be performed using appropriate computer codes. DOE suggest that this statement could be added at the end of Line 232, and phrased as:

"Computations shown in the appendix can be performed either by hand computations or through the use of computer codes. A number of computer codes are available that can be used for probability computations." It is also suggested that a similar statement be added to Appendix B as well.

Response to DOE Comment 12:

Staff agrees with the commenter that computations for the event sequence probabilities can be performed either by hand computations or through the use of computer codes. However, these options are available to the applicant for any calculations. Although the details of associated quality assurance requirements may be different for the computational method selected, the overall staff review strategy for the DOE analysis is not affected significantly by the computational method selected by DOE. Therefore, staff does not see the need to revise the ISG.

No changes were made to the ISG as a result of this comment.

NEI Comments:

On July 1, 2006, NRC Chairman Dale E. Klein said that regulatory stability is a crucial element in ensuring that NRC can complete its work in a timely manner. Unfortunately, HLWRS ISG-1

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has the potential to create regulatory instability. Accordingly, we encourage NRC to take advantage of the opportunity afforded by this comment period to reconsider issuing this ISG and to instead address the issue of seismically initiated event sequences, more appropriately, in the Yucca Mountain Review Plan. Industry is recommending this course of action for the following five reasons:

1. Interim Staff Guidance is not the most effective means for NRC to clarify its regulatory intent and could lead to unforeseen consequences due to inadequate review (including not being reviewed by the Commission itself).
2. Use of an “Interim Guidance”, a vehicle that was meant to address emerging issues affecting multiple licensed activities, is unnecessary in a situation where there is only a single potential licensee that is not currently conducting any licensed activities.
3. Draft HLRWS ISG-1 lacks safety-focus in that it sets forth a more stringent standard for the seismic design of repository surface facilities than currently exists for reactors without recognizing the comparatively lower level of risk associated with the repository facilities. In doing this, HLRWS ISG-1 directly contradicts the very regulation (10 CFR Part 63) that it seeks to inform.
4. Providing guidance to staff that assumes a specific methodology for demonstrating compliance with 10 CFR 63.111 is likely to bias the staff’s review against other methodologies that DOE may propose that provide equal or better protection of public health and safety. Furthermore, giving DOE the opportunity to first propose an acceptable method for meeting the regulation would allow for a more independent review on NRC’s part – avoiding a situation where NRC is both telling DOE how to demonstrate compliance and then determining if compliance was demonstrated as instructed.
5. The specific methodology proposed in this draft ISG lacks both precedent and scientific support.

Each of the reasons summarized above was discussed in detail in the NEI comments.

Response to NEI Comments:

The commenter states that changes to the existing guidance to the staff in the Yucca Mountain Review Plan (YMRP), NUREG-1874, in the area of seismically initiated event sequences should be made by revising the YMRP, instead of using the vehicle of Interim Staff Guidance (ISG), in this case HLWRS-ISG-01. To support this position, the commenter provides five reasons.

1. The first reason for revising the YMRP instead of the ISG in the commenter’s view is that ISG is not an effective means for NRC to clarify its regulatory intent and could lead to unforeseen consequences due to inadequate review (including not being reviewed by the Commission itself). Staff does not agree with the commenter that staff should have revised the YMRP instead of using the ISG process. **The purpose of the ISG process is to allow for the rapid identification and resolution of technical issues that emerge as a result of staff**

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interaction with DOE in preparation for the future License Application review. To increase regulatory efficiency and enhance clarity of communication with DOE and the public, staff anticipate providing incremental updates to the YMRP in the form of ISGs. Because 10 CFR Part 63 is still undergoing revision as part of the public rule development process, staff believes it is inappropriate to consider developing a major revision to the YMRP until such time as Part 63 is finalized. If a revision to the YMRP is warranted, staff will be able to insert the appropriate text directly from the ISG into the YMRP. The ISG remains available to provide background discussion and examples, to supplement text in the YMRP at a level of detail normally not found in a SRP.

An Interim Staff Guidance provides guidance to NRC staff on approaches to use during the review of a potential license application. Methods in an ISG are provided for illustration purposes only, and do not imply a preferred method or approach that must be used by an applicant. The review approach in an ISG provides a framework for staff to conduct an efficient review, consistent with regulatory requirements. ISGs are issued at the NRC Office Division level, because Standard Review Plans do not represent regulatory commitments or interpretations by staff. During the ISG development process, the technical and regulatory basis for the ISG is thoroughly reviewed by appropriate NRC technical, management, and legal staff.

No changes were made to the ISG as a result of this comment.

2. The second reason for revising the YMRP instead of the ISG in the commenter's view is that the ISGs are not necessary for the YM project because DOE is the only potential licensee for the proposed repository, and that no licensing activities are being conducted currently. While it is true that DOE is the only potential licensee and no licensing activities are currently underway, important technical issues continue to be identified in the complex, one-of-a-kind Yucca Mountain project during the pre-licensing interaction with DOE. As these issues are being resolved, regardless of the number of potential licensees, the ISG process provides an effective and open means for staff to address these issues as it prepares itself to review the potential LA in an effective and timely manner.

No changes were made to the ISG as a result of this comment.

3. The third reason for revising the YMRP instead of the ISG in the commenter's view is that the ISG-01 lacks safety-focus and that it sets forth a more stringent standard for the seismic design of repository surface facilities than for reactors even though the repository facility has a lower level of risk, thus directly contradicting the very regulation that it seeks to inform. The commenter also questions the purpose of Section 63.102(f) and how it is accounted for in the draft HLWRS-ISG-01.

Staff does not agree with the commenter that the ISG-01 proposed methodology for seismically initiated event sequences sets forth a more stringent standard for the seismic design of repository facilities than for reactors, and that the ISG-01 contradicts the 10 CFR Part 63. The methods discussed in the draft ISG do not provide any guidance on the seismic design requirements, but suggests a methodology to categorize seismically initiated

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event sequences for compliance with Part 63.

The preclosure compliance requirements in 10 CFR Part 63 are performance-based, in that instead of specifying specific design loads and corresponding acceptance criteria (codes/standards) the regulations in § 63.111 for geological repository operations area (GROA) specify the radiological dose limits to the public and workers. In the preclosure safety analysis (PCSA), DOE must demonstrate that the design of the GROA will meet these dose limits taking into consideration certain event sequences. An event sequence is defined as a series of occurrences that could lead to exposure of individuals to radiation. It includes one or more initiating events and associated combinations of repository system component failures. A Category 2 event sequence is defined as having at least one chance in 10,000 of occurring before permanent closure, or 10^{-6} per year, assuming a 100-year preclosure period.

The ISG-01 provides a methodology to determine if a seismically initiated event sequence is a Category 2 event sequence, as defined in § 63.2, or if it **is beyond category 2** and it can be screened out from further consideration. If the event sequence is determined to be a Category 2 event sequence, DOE has to demonstrate that the dose limit of 5 Roentgen equivalent for man (rem) at any point on the boundary of the site is met. These performance-based requirements in 10 CFR Part 63 necessarily result in a different type of compliance demonstration than are traditionally used for reactor licensing.

For reactors, a seismic initiating event is related directly to the characteristics of a specified Safe Shutdown Earthquake (10 CFR 50, Appendix S), which is used as the design basis for each of the safety-related structures, systems, and components (SSCs), and demonstration of compliance with regulations. In contrast, Part 63 does not specify a design basis earthquake, but requires consideration of potential event sequences and their consequences. The guidance in the draft ISG shows how the fragilities of one or more SSCs in an event sequence can be combined with the seismic hazard curve to determine the likelihood of an entire event sequence, which is the metric used for compliance in 10 CFR Part 63. Section 63.102(f), which allows the seismic initiating events to be considered based on precedents adopted for nuclear facilities with comparable or higher risks, was not used in the ISG-01 because, as described earlier, compliance demonstration for Part 63 requires categorization of seismically initiated event sequences, which can be performed using the seismic hazard curve and the fragilities of SSCs, instead of a single initiating seismic event (safe shutdown earthquake) traditionally used for design in reactor licensing.

DOE has not yet finalized or published a preclosure safety analysis for proposed surface facilities at Yucca Mountain. However, based on recent technical exchanges, staff anticipates that the DOE preclosure safety analysis methodology will not result in more stringent design for seismic hazard than required for reactors.

No changes were made to the ISG as a result of this comment.

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4. The fourth reason for revising the YMRP instead of the ISG in the commenter's view is that the specific methodology in the ISG-01 may bias the staff's review against other methodologies that DOE may propose, even if these alternatives provide equal or better protection of public health and safety. The commenter also raises the concern that the NRC should not dictate to DOE how to demonstrate compliance with regulation because it does not allow for a more independent review of the future DOE license application. Staff does not agree with the comment that providing a methodology for seismically initiated event sequences in ISG-01 may preclude DOE from proposing other methodologies for complying with Part 63. Similar to the YMRP, ISGs are prepared to provide guidance to the staff for review of any future license application from the DOE for the proposed YM repository, and are not mandatory. DOE has the option of proposing alternative methodologies to comply with the regulations, which the staff would evaluate during their review of the license application. The system of providing guidance to the staff for review of license applications and verify compliance to regulations has been used by NRC for other regulations dealing with the use of radioactive materials.

No changes were made to the ISG as a result of this comment.

5. The fifth reason for revising the YMRP instead of the ISG in the commenter's view is that the specific methodology proposed in the draft ISG-01 lacks both precedent and scientific support.

The commenter raises the concern that applying technical analysis to seismic events with probability of exceedance lower than one in 10,000 per year to establish design bases is unprecedented, and that it would result in stringent design criteria. Staff disagrees with the commenter's concern because the ISG-01 does not provide guidelines on the design bases or design criteria for the SSCs of the Geologic Repository Operations Area at the repository, but provides a method for demonstrating compliance with the performance requirements for the SSCs in the preclosure safety analysis. Additionally, the methodology proposed in the draft ISG has precedent in the Mixed-Oxide Fuel Fabrication Facility at the Savannah River Site in South Carolina, where a methodology that is similar to the one outlined in the draft ISG was used by the applicant to demonstrate performance of the facility during seismic event sequences.

Staff disagrees with the comment that the methodology proposed in the ISG-01 lacks scientific support. The proposed ISG-01 methodology is consistent with the performance-based methodology in the consensus standard ASCE 43-05, and is being considered for use in the seismic design of new nuclear power plants. The methodology has the scientific support of the experts in the industry, and is not beyond the state-of-the-art for performance evaluation of structures, systems, and components for seismic hazard.

No changes were made to the ISG as a result of this comment.

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Lincoln and White Pine Counties, Nevada, Comment 1:

The decision by NRC to approve the use of the methodology which is similar to the one outlined in ASCE 43-05 appears based upon the method's recent use in licensing of the Mixed-Oxide Fuel Fabrication Facility at the Savannah River Site. The MOX facility has a projected operating life of 20-40 years and we assume that the NRC operating license is for the same period of time. White Pine County is concerned about the ability of ASCE 43-05 to appropriately account for uncertainty over the longer time-frame for Yucca Mountain, given that the preclosure operating period for the repository project is at least 100 years. NRC should ensure that the methodology suggested by ASCE 43-05 can produce accurate results over the 100-year plus operating life of the Yucca Mountain project. This issue should be addressed in the final staff guidance.

Response to Lincoln and White Pine Counties, Nevada, Comment 1:

The commenter raises a concern that the ISG-01 methodology, as suggested by ASCE 43-05, may not produce accurate results over the 100-year plus operating life of the Yucca Mountain repository preclosure operating period. Staff believes that the operating lives of SSCs at Yucca Mountain facilities are accounted for in two ways: (i) in categorization of seismically-initiated event sequences, e.g., one chance in 10,000 of occurrence during the preclosure period specified in Part 63 for category 2 event sequences; and (ii) in development of the fragility curves that would account for any adverse effects of material aging during the preclosure period. To ensure that the aging effects, if any, of the operating period duration are considered in developing the fragility data for the SSCs, ISG has been revised to add the following at the end of the sentence in Line 59.

“Effects of aging of materials, if any, during the preclosure period, should be considered in developing the fragility curves for SSCs ITS.”

Lincoln and White Pine Counties, Nevada, Comment 2:

The example provided in Appendix A raises questions as to whether NRC has adequately considered the geometric consequence of closely-spaced recurring seismic events in determining the mean seismic hazard and related failure probability of a structure, system or component (SSC) important to safety (ITS). HLWRS-ISG-01 and/or the Yucca Mountain Review Plan (YMRP) may need to be revised to ensure that such characteristics of seismic hazard and related failure probability are appropriately considered in computing SSC ITS probability of failure during a seismic event.

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Response to Lincoln and White Pine Counties Comment 2:

The example of Appendix A is based on a hypothetical seismic hazard curve selected for illustration purpose only. For the development of the Yucca Mountain site-specific mean seismic hazard curves (Reference, section 6.4), however, DOE has evaluated the potential of closely-spaced recurring seismic events by considering simultaneous multiple ruptures on parallel dipping faults, and increasing the ground motion parameters for a given probability of exceedance value. Since the effects of the closely-spaced recurring seismic events are considered in the seismic hazard curve, staff believes that the ISG-01 methodology would result in an appropriate value of the failure probability of a structure, system, or component, important to safety, and that ISG-01 or YMRP need not be revised.

Reference:

Civilian Radioactive Waste Management System, Management and Operating Contractor (CRWMS, M&O), 1998, *Probabilistic Seismic Hazard Analyses for Fault Displacement and Vibratory Ground Motion at Yucca Mountain, Nevada* (I. G. Wong and J. C. Stepp, coordinators), unpublished report prepared for U. S. Geological Survey, 3 Volumes.

No changes were made to the ISG as a result of this comment.

Lincoln County, Nevada, Comment 3:

HLWRS-ISG-01 “provides an example methodology” to review seismically initiated event sequences. It is unclear if the guidance directs NRC staff to utilize the suggested methodology or merely offers same as an alternative among possible methods. To reduce uncertainty, it would be helpful if NRC provided explicit guidance as to how the selection of an appropriate methodology would be made, and when, if at all, a given methodology might be unacceptable for use. The discretion in choice of methods appears to introduce unwarranted ambiguity and uncertainty.

Response to Lincoln County, Nevada, Comment 3:

An Interim Staff Guidance provides guidance to NRC staff on suggested methodologies to use during the review of a potential license application. Methods in an ISG are provided for illustration purposes only, does not direct the staff to utilize the methodology, or imply a preferred methodology that must be used by an applicant. The review approach in an ISG provides a framework for staff to conduct an efficient review, consistent with regulatory requirements. DOE has the option of proposing alternative methodologies to comply with the regulations, which the staff would evaluate during their review of the license application. Any methodology that demonstrates compliance with the regulations, and has adequate technical bases, would be acceptable.

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No changes were made to the ISG as a result of this comment.

Nye County, Nevada Comment:

The proposed ISG ignores Section 63.102(f) of the regulations enacted by the Commission. What is unclear is why the staff would try to impose consideration of lower probability of seismic events at a repository than is required for operating power reactors based on the wording of 10 CFR 63 taken in its entirety. The proposed ISG would impose more stringent seismic requirements that provides little or no safety benefit and could substantially increase repository preclosure facility costs if implemented as drafted.

Perhaps more importantly, the ISG totally ignores the existence of Section 63.102(f) of the regulation. As applied to preclosure seismic initiating events, events with a probability corresponding to that for which nuclear power reactors are licensed are adequate to protect public health and safety at a repository. Designing a repository to lower probability seismic initiating events is not required, nor is there a requirement to label structures, systems, and components of a repository “important to safety” if their purpose is to prevent or mitigate such lower probability seismic event initiators. Any staff guidance should at a minimum recognize that fact.

Response to Nye County, Nevada Comment:

This comment is same as the NEI comments - Reason 3, discussed above. See staff response for the NEI comments, Reason 3.

No changes were made to the ISG as a result of this comment.