March 8, 2012

MEMORANDUM TO: Michael R. Johnson, Director
Office of New Reactors

FROM: Eric J. Leeds, Director **/RA/**
Office of Nuclear Reactor Regulation

SUBJECT: PUBLIC COMMENTS IN RESPONSE TO DRAFT GENERIC LETTER 2011-XX, "SEISMIC RISK EVALUATIONS FOR OPERATING REACTORS"

The Office of Nuclear Reactor Regulation (NRR) received a total of 25 docketed sets of public comments in response to the subject draft Generic Letter that was released for comments between September 15 and December 15, 2011. NRR staff sorted the public comments and identified 12 unique categories that captured all the aspects (items) reflected in the public comments. The enclosure contains all 12 categories. In each category, NRR staff identified the commenter(s) by the numeric designation of the public correspondence received followed by a summary of the aspect (item) in the correspondence that fits in that category. The enclosure also contains a proposed response to each included item. Considering that the Generic Issue (GI)-199 Generic Letter will be subsumed and entirely captured within the proposed Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.54(f) letter addressing the Fukushima Near-Term Task Force Recommendations 2.1 and 2.3, NRR believes the proposed resolution of the public comments should inform the interactions the Office of New Reactors has with stakeholders regarding the details and approaches to responding to the 10 CFR 50.54(f) letters.

If you desire any clarification regarding the input, please contact Patrick Hiland, Director of the Division of Engineering in NRR.

Enclosure:
Comments on Draft Generic Letter

CONTACT: Kamal A. Manoly, NRR/DE
(301) 415-2765

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ADAMS ACCESSION NO.: ML12032A001

OFFICE	NRR/DE	NRR/DE	NRR/DRA	NRR/DRA	NRR/DRA/D	
NAME	YLi	KManoly	SLaur	DHarrison	JGiitter	
DATE	02/01/12	02/01/12	02/07/12	02/07/12	02/07/12	
OFFICE	NRR/DE/D	NRR/DPR/ PGCB/PM	NRR/DPR/ PGCB/LA	NRR/DPR/PGCB/BC	NRR/DPR/D	NRR/D
NAME	PHiland	ARussell	CHawes	KMorgan-Butler	TMcGinty	ELeeds
DATE	02/07/12	02/16/12	02/16/12	02/ 21 /12	02/ 23 /12	03/ 08 /12

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Stakeholder Comments on Draft Generic Letter Regarding Generic Issue (GI)-199
Current as of January 24, 2012

The Nuclear Regulatory Commission (NRC) received 25 comments on draft Generic Letter 2011-XX, "Seismic Risk Evaluations for Operating Reactors." The comments are in the Agencywide Documents Access and Management System (ADAMS) and may be found at accession numbers as shown below:

#	Name	Affiliation	ADAMS Accession no.
1	Anonymous	N/A	ML11249A111
2	Dean Wilkie	N/A	ML11252B051
3	Nancy Allen	N/A	ML11252B052
4	Zhenming Wang	University of Kentucky	ML11263A182
5	Kent Halac	N/A	ML11264A087
6	David Lochbaum	Union of Concerned Scientists (UCS)	ML11279A105
7	Zhenming Wang	University of Kentucky	ML11279A106
8	Stephen McDuffie	N/A	ML11286A315
9	Donnie Harrison	NRC	ML11301A100
10	Donnie Harrison	NRC	ML11301A101
11	Donnie Harrison	NRC	ML11301A102
12	Donnie Harrison	NRC	ML11301A103
13	Louis Zeller	Blue Ridge Environmental Defense League	ML11307A390
14	Peter Melzer	N/A	ML11325A239
15	Michael Peck	N/A	ML11325A240
16	Thomas Zachariah, Jr.	Pressurized Water Reactor Owners Group (PWROG)	ML11354A111
17	Alyse Peterson	New York State Energy Research and Development Authority (NYSERDA)	ML11354A227
18	James R. Becker	Pacific Gas & Electric Company (PG&E)	ML11354A229
19	Alexander Marion	Nuclear Energy Institute (NEI)	ML11354A230
20	Charlie Donaldson	Office of the New York Attorney General	ML11354A231
21	Robin Ritzman	FirstEnergy Nuclear Operating Company (FENOC)	ML11355A022
22	Scott A. Bauer	Strategic Teaming and Resource Sharing (STARS) Alliance	ML11355A023
23	Michael D. Jesse	Exelon Nuclear	ML11364A049
24	Kenneth Canavan	Electric Power Research Institute (EPRI)	ML12005A085
25	Beth Quattlebaum	South Carolina Electric & Gas (SCE&G)	ML12005A089

ENCLOSURE

Comments Supporting Specific Aspects of the Proposed Generic Letter

Three commenters [8, 18, 22] specifically stated they supported the overall goal of the Generic Letter (GL) and/or stated they supported specific aspects of the GL, with specific comments.

Comments Concerning the Scope of the Proposed Generic Letter

Two commenters [17, 20] stated that spent fuel storage facilities should be included in the assessment. *The NRC staff agrees and has expanded the scope of the near-term assessments in the proposed 50.54(f) letter to include spent fuel pools. Independent Spent Fuel Storage Installation and other facilities have been identified for longer-term assessment under Tier 3.*

Two commenters [2, 14] suggested that automatic seismic scram systems should be evaluated to determine whether requiring such systems would improve nuclear power plant safety and suggested specific structures, systems, and components (SSCs) that should be included in the seismic risk assessment (e.g., vent stacks, emergency diesel generators, ultimate heat sink, emergency core cooling system). *The NRC staff notes that current SCRAM systems for all licensed nuclear power plants will shut down the nuclear reactor in the event that specified parameters are exceeded. An automatic reactor trip on detection of a seismic event greater than a specified value will be evaluated by the NRC for any specific plant where the seismic risk assessment indicates a significant safety improvement. The NRC staff notes that the plants with the highest seismic hazard do have seismic SCRAM system. Other plants do not have seismic SCRAM systems because: (1) There are many non-seismic sensors which can shutdown a nuclear power plant if earthquakes occur; (2) Seismic sensors are connected directly to the instrumental panel located in the operating room and the operator can immediately shut down a plant if the sensor indicates ground motion exceeding operating-basis earthquake or safe-shutdown earthquake (SSE); (3) Strong earthquakes are much less frequent in the Central and Eastern United States (CEUS) than in the Western United States (WUS) and far less than in Japan.*

One commenter [17] recommended that additional inspections be performed to examine the reliability and accuracy of licensee seismic monitoring equipment. *The NRC staff agrees and is preparing an Information Notice to alert licensees of the North Anna event, including the performance and reliability of seismic monitoring equipment. The regular inspection program includes provisions that allow the inspection of seismic monitoring equipment. Licensees will be performing walkdowns to ensure compliance with the seismic design basis as part of the Fukushima Near-Term Task Force (NTTF) Recommendation 2.3, 50.54(f) letter. The NRC staff believes no additional inspections are needed.*

One commenter [1] stated that the risk of core damage from linked external events, such as a tsunami caused by a seismic event, should be considered. *The NRC staff notes that the risk assessment methods set forth in the letter would include such linked events. As a Fukushima NTTF Tier 3 activity, the NRC is developing guidance for performing analysis of seismic-induced fires and floods.*

One commenter [19] said that plants should verify that the conclusions of the Individual Plant Examination of External Events (IPEEE) remain valid, considering any plant modifications that may have been made since the IPEEE was performed, and that walkdowns should be performed to identify vulnerabilities a plant may have to seismic events. *The NRC staff agrees. The validity of the IPEEE insights and follow-up actions are planned as part of the scope of the Fukushima NTTF Recommendation 2.3, 50.54(f) letter.*

One commenter [20] stated that non-operating reactors should be examined to determine if they pose a threat to operating reactors or spent fuel storage facilities. *The NRC staff notes that the scope of the GL does not include non-operating reactors. However, for reactors that perform a risk assessment (e.g., Seismic Margin Analysis (SMA) or Seismic Probabilistic Risk Assessment (SPRA)), the potential for interactions with co-located or nearby non-operating reactors would be in scope of the assessment. The GL does not address spent fuel storage facilities.*

A number of commenters [18, 19, 21, 22, 23, 25] supported an integrated, flexible, performance-based approach ("FLEX") as part of implementation of the Fukushima NTTF recommendations. This integrated approach would allow the industry to achieve safety benefits in the short term and complete the seismic studies in a more efficient and effective manner than could be accomplished if each recommendation were pursued independently. The approach would avoid unnecessary resource expenditures and re-work. Several commenters [19, 21] said "withdraw this draft generic letter" in favor of the FLEX approach. *Unless some fundamental elements need to be developed, the NRC staff does not agree that the schedule for performing seismic hazards assessments should be delayed because this would be contrary to direction from the Congress of the U.S. in Section 402 of the 2011 omnibus appropriations bill, Public Law 112-074.*

Two commenters [19, 25] stated that, in the long term, it will be important to have an established process for evaluating the effects of new seismic hazard information and methods, and that such a process should be integrated with the FLEX program. One commenter [9] stated that requesting licensees to address updated seismic hazard information may be appropriate and another commenter [3] also referred to new seismic information and suggested the NRC should update rules and regulations to take this new data into consideration. *The NRC staff agrees with the need to address new seismic hazard information when it becomes available and will address processes for evaluating new information under the Fukushima NTTF Recommendation 2.2. The NRC staff also agrees that, as justified, programs such as FLEX might be able to be integrated into the assessment.*

PG&E [18] was concerned that the generic initiatives could conflict with its license amendment request (LAR) 11-05, "Evaluation Process for New Seismic Information and Clarifying the Diablo Canyon Plant Safe Shutdown Earthquake" without adding any safety benefit. PG&E also stated that it should be allowed to use the 2011 probabilistic seismic hazard analysis (PSHA) results from the Shoreline fault study after accommodating review comments from NRC. *In developing the 50.54(f) letter for Diablo Canyon, the NRC staff will coordinate with any ongoing seismic license applications and related issues.*

Comments Related to the Need to Resolve the Seismic Issue More Quickly Than the Schedule Set Forth in the Proposed Generic Letter

Several commenters [3, 4, 7, and 20] believed there is an urgent need to complete the evaluations expeditiously as shown by recent seismic events (e.g., Japan; Virginia). Another commenter [13] noted that NRC has been slow to take action on this issue, even though the information and methods have been available for some time. One commenter [20] noted that the information already exists for some plants (e.g., sites for which there is an application for a licensee to build a new power reactor) and that these plants should not delay the reassessment of their earthquake protection. The commenter also indicated that all licensees should have to justify the time necessary to perform the assessment. *The NRC staff agrees and is pursuing expeditious performance of the requested analysis under the 50.54(f) letters related to the Fukushima NTTF Recommendations 2.1 and 2.3.*

One commenter [17] stated that prompt NRC evaluation of seismic risk is critical to the impending Indian Point, Units 2 and 3 license renewals and should be given top priority. *The NRC staff plans to prioritize seismic risk evaluations based on the potential safety significance at a given site and will coordinate with any ongoing license applications (e.g., license renewal requests) for each licensee. NRC plans to give high priority to resolving seismic issues at the Indian Point plants.*

Comments Concerning the Resources Required for Performing the Requested Analyses

Several commenters [16, 18, 19, 22, 23] indicated that the resource estimates for performing the work were underestimated, which would result in a longer time to perform the work. For example, a Senior Seismic Hazard Analysis Committee (SSHAC) Level 3 study requires significant resources and can take 4 years to complete. Several commenters pointed out that significant resources will be required while there is a limited pool of relevant expertise for performing SPRAs or SMAs and associated peer reviews of those studies and that the peer review is resource intensive. Commenters said that meeting Regulatory Guide (RG) 1.200, Revision 2, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” requirements would increase time and resources. *The NRC staff will continue to work with industry and stakeholders to identify and resolve resource and schedule issues. The NRC staff notes that licensees may respond to the 50.54(f) letter with proposed schedules that are different than the schedule set forth in the letter, along with appropriate justification for any completion dates later than specified. The NRC staff will determine whether such schedules are commensurate with the potential safety significance of the issue to be addressed.*

Comments Concerning Reasons Other Than Resources for Delaying the Schedule Proposed Generic Letter

Commenters [16, 24] pointed out that the Next Generation Attenuation (NGA) program for the CEUS has not been completed yet; the schedule should consider availability of this study, or else re-work would be required once the study is released. One commenter [16] noted that industry guidance for peer reviewing SPRAs has not been developed and piloted, that there is no NRC endorsement of the SMA portion of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME)/American Nuclear Society (ANS) PRA standard, and that the schedule should be flexible enough to accommodate updates to the PRA standard. One commenter [22] said that the collection of new site-specific data to support the methods of NUREG/CR-6728 would require a longer schedule than described in the proposed GL. The same commenter stated that WUS plants are required to develop hazard curves from an updated PSHA, which will involve substantially more effort than required from CEUS plants. WUS plants should be allowed to use existing plant-specific PSHAs as the basis for the 180-day submittal and update them later as an element of their updated SPRA. Alternatively, WUS plants should be allowed sufficient time (~ 4 years) to SSHAC level 3. One commenter, EPRI, [24] provided a number of technical reasons for extending the schedule to allow completion of work-in-progress, resulting in “a more realistic and meaningful assessment of seismic risk …” and referred to a multi-year program it had begun in 2011. A commenter [19] stated that the GL process presents significant challenges and needs further discussion, for example, updated site characterization/soil profile information for input to attenuation models at sites with existing plants, justification of high frequency exceedances, the value of conducting evaluations now with current ground motion models when new models are under development, and the benefits of seismic PRAs and fault-space based seismic margins assessments relative to the effort needed to complete those evaluations. *The NRC staff will continue to work with industry and stakeholders to identify and resolve methods and guidance issues. The NRC staff notes that licensees may respond to the 50.54(f) letter with proposed schedules that are different than the schedule set forth in the letter, along with appropriate justification for any completion dates later than specified. The NRC staff will determine whether such schedules are commensurate with the potential safety significance of the issue to be addressed.*

One commenter [22] indicated that the standards invoked on page 5 for technical adequacy of PRA methods require a formal process of peer review and resolution of findings and observations. In addition, the requested information for SPRAs, under item (5)B.(3) on page 6, includes "dates and findings of any peer reviews." The commenter requested that the NRC clarify expectations, including schedule expectations, for completing peer reviews. *The NRC staff will continue to work with industry and stakeholders to clarify expectations regarding the requested peer reviews. The NRC staff notes that licensees may respond to the 50.54(f) letter with proposed schedules that are different than the schedule set forth in the letter, along with appropriate justification for any completion dates later than specified. The NRC staff will determine whether such schedules are commensurate with the potential safety significance of the issue to be addressed.*

Comment Suggesting the Seismic Reviews Should be Staggered

One commenter [16] stated that the availability of the data required to develop the ground motion response spectrum (GMRS) and compare it to the SSE may vary at different plants; soil sites may require a longer time period to develop the information. Once each plant has developed the new GMRS and comparison to the SSE, NRC and industry should agree on appropriate prioritization of the risk assessment, so that limited resources available for that effort would be applied to the plants that would benefit the most in terms of increase in public safety. *The NRC staff agrees that it would be beneficial to evaluate the GMRS against acceptance criteria and to develop a staggered schedule that appropriately prioritizes the risk assessments. The NRC will work with industry and stakeholders in developing the criteria and priorities for staggered schedules.*

Comments Concerning the Seismic Method in the Proposed Generic Letter

One commenter [4, 7] stated that SSHAC emphasizes the procedure rather than technical information. The commenter noted that the Yucca Mountain Project is the highest SSHAC level project ever implemented in US. The conclusion is that it overestimated ground motion for the site (PGA = 11g). In addition, the commenter stated that PSHA is flawed because it mistakenly uses annual frequency to replace annual probability. *The NRC staff does not agree. The SSHAC approach and PSHA methods have been endorsed in RG 1.208, "A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion."*

One commenter [1] pointed out that the effects of a seismically-induced tsunami are significantly different than the effects of a flood due to the dynamic effects of the water. *The NRC staff agrees that the dynamic effects from floods and seismically-induced tsunamis are different. As the NRC (and licensees) addresses these different type events, the specific effects of the events will be considered.*

One commenter [12] stated that the Mineral, Virginia earthquake spectrum recorded at the North Anna power plant confirmed that original North Anna, Units 1 and 2, SSE spectrum was more conservative than the spectrum (GMRS), developed using the performance-based method for the proposed North Anna, Unit 3, in a certain low frequency band. *The NRC Staff notes that the comment indicates that the August 23, 2011, Mineral, Virginia earthquake response spectrum determined from the seismic recordings at the foundation basemat exceeds the performance-based GMRS for the proposed Unit 3 at lower frequencies. NRC staff is currently evaluating the recordings from the earthquake to determine any potential impacts on the proposed Unit 3.*

One commenter [16] stated that if the review level earthquake (RLE) was not invalidated by IPEEE, it should be allowed to be used to compare to GMRS. [The NRC staff interprets the comment to apply to licensees who were able in their IPEEE to demonstrate margin to the RLE.] *The NRC staff will continue to work with industry and stakeholders to identify and resolve*

acceptance criteria, methods, and guidance issues. The use of the RLE as a potential screening criterion will be considered.

One commenter [23] stated the IPEEE program can be verified and updated, as appropriate, to reaffirm that plants have significant capacity to withstand seismic events beyond the original design basis. *The NRC staff patterned this information request after the seismic portion of the IPEEE, in that either an SMA or SPRA is considered acceptable for the risk assessment if the screening criteria are met. However, the NRC staff also recognized that "reduced scope" SMAs may not provide sufficient information to allow resolution of GI-199, whereas the "fault-space based" SMA would provide acceptable information.*

Comments Concerning Acceptance Criteria

Three commenters [17, 19, 25] implied the absence of specific guidance requirements and acceptance criteria in some aspects in the draft GL. The comments stress the need for such input to ensure: (i) uniformity of plant walkdowns, (ii) acceptable generation of the GMRS, and (iii) mutually accepted seismic evaluation processes that will result in successful site specific assessment of new seismic hazard information. Another commenter [16] addressed two concerns. The first is related to the need for a definition of "key assumptions" in the context of risk informed approaches (SMA and SPRA). The second is related to providing a definition of "sufficient safety margin" mentioned in step 5 of the draft GL enclosure. *The NRC staff agrees, but believes that acceptance criteria and definitions of key terms can be developed after issuance of the 50.54(f) letter. The NRC staff will work with industry and interact with interested stakeholders during the development of the acceptance criteria.*

Three commenters [15, 18, 22] stated the proposed GL needs to address operability since the use of current seismic information and methodologies is expected to produce results that may exceed those identified in the original design. Two commenters [18, 22] emphasized the need for providing acceptance methods for assessing operability of plants during the interim period, while clearly stating that the evaluations involve new seismic information and current methodologies that are beyond the design basis and need not imply consideration of "degraded and non-conforming conditions." One commenter [15] stated that the operability process provides assurance that plants can continue to operate safely pending completion of longer term corrective actions. The commenter [15] stated that the operability process should be immediately entered once a licensee develops information indicating that the plant seismic safety analysis may no longer be bounding or if a licensee no longer meets their current licensing basis. *The NRC staff has concluded that the new seismic information does not pose an immediate safety concern (NTTF report; GI-199 safety/risk assessment). Also, "operability" should be judged relative to the current licensing basis for the plant. The NRC staff is seeking information, pursuant to 10 CFR 50.54(f), to determine whether the new seismic information would require that a given plant's license be modified, suspended, or revoked. Any imposition of new requirements, as defined in 10 CFR 50.109, would be in compliance with that regulation.*

Comments Seeking Clarifications to the Proposed Generic Letter

One commenter [20] requested that the NRC clarify whether power reactors issued construction licenses prior to March 21, 1971, must comply with "General Design Criteria" when reassessing earthquake hazards. *The NRC staff agrees to clarify, as needed, that when licensees reassess earthquake hazards in response to the 50.54(f) letters that it does not change their current licensing basis.*

One commenter [22] requested that the NRC clarify expectations regarding SSHAC levels that should be applied to development of site-specific PSHAs for plants located in the WUS. *There is no new regulatory requirement regarding the use of a particular SSHAC level. Current NRC guidance (RG 1.208) specifies the use of the SSHAC approach for developing seismic hazard characterization for siting nuclear power plants. Current practice for new reactor applicants is the performance of a SSHAC up to level 3 for seismic hazard characterization.*

One commenter [8] is concerned that based on the wording in the GL, there could be confusion between the current licensing basis SSE and the request in the GL to perform analyses using a GMRS developed from new site-specific hazard curves and suggested enhanced wording as "…the SSE, in the current licensing basis, in tabular and graphical format." *The NRC staff agrees with the comment and will clarify that the SSE is the current licensing basis and the GMRS is not part of the current licensing basis.*

One commenter [8] suggested deleting the second sentence in the section titled "Required Response," second bullet, "In its response, where applicable, each addressee is requested to identify its selected assessment approach (i.e., SMA or SPRA)," because the selected approach is not applicable to the seismic hazard curves and ground motion response spectra. *The NRC staff will clarify the intent of the referenced bullet in the text of the 50.54(f) letter, as appropriate.*

One commenter [8] suggested adding in the enclosure, "Development of Requested Information," Step 2, second bullet, American National Standards Institute (ANSI)/ ANS-2.29-2008 as a standard to be followed in developing a PSHA. *The NRC staff has provided guidance for developing a PSHA in RG 1.208 and does not intend to modify that guidance at the present time. Licensees may propose other approaches that will be reviewed by the NRC staff on a case-by-case basis.*

One commenter [16] indicated that the level of plant-specific information required to support the requests of the draft GL is not clear - "plant-specific" is mentioned in Item (2) and (3) at page 5 of the draft GL, Step 2 in the Enclosure indicates that regional and local refinements are not necessary. *The NRC staff will address and clarify the issues indicated by the commenter in the 50.54(f) letter.*

One commenter [16] requested that the NRC clarify if the NRC staff's review of the information submitted will result in the issuance of a safety evaluation for the site, thus changing the plant's licensing basis, or take some other form. *The NRC staff is requesting information to evaluate*

the adequacy of the current licensing basis of the plant and will follow its processes (e.g., backfit) to determine if additional actions are necessary.

One commenter [17] recommended that the NRC inform licensees that their submissions in response to the GI-199 GL are mandatory. *The NRC is pursuing the information via a 10 CFR 50.54(f) letter, to which licensees are required to respond.*

Two commenters [18, 22] stated that the GL should more clearly specify that the 10^{-5} per year seismic core damage frequency (SCDF) value is for screening purposes only and does not require further action unless the NRC completes a backfit analysis in accordance with 10 CFR 50.109. *The NRC staff agrees. However, this screening criterion has been removed from the 10 CFR 50.54(f) letter.*

One commenter [22] identified that Figure 1 and Step 4 of Enclosure 1 requires plants with an SSE that bounds the GMRS except for at the high frequency ground motion exceedance levels (~25 Hz) to provide detailed justification that affected plant structures and equipment will maintain their seismic function, and requested that the NRC confirm that this detailed justification is not required for plants proceeding from Step 3 to Step 6. *The NRC staff agrees and confirms that this detailed justification is only needed for plants where the SSE bounds the GMRS, except for at high frequencies, and will include additional information regarding the staff expectations for this detailed justification.*

One commenter [25] indicated that there are inconsistencies in the order of activities requested to be completed. *The NRC will ensure that the order of activities requested in the 50.54(f) letter is logical and consistent.*

Comments Questioning the Need for the Proposed Generic Letter or Seeking Justification for Specific Aspects of the Proposed Generic Letter

Two commenters [5, 23] questioned the real significance of the generic issue and need for the GL based on the use of an unproven new model and cost in addressing the issue. The commenters cite previous probabilistic and/or deterministic seismic analyses (e.g., the evaluations in the IPEEE program) showing that the seismic capacity of operating plants can withstand seismic events beyond the seismic design basis indicating excess design margin and not an imminent safety concern, including the fact that there was no impact on safety from the North Anna earthquake, even though the recent earthquake exceeded its design basis showing excess design margin in CEUS plants. *The NRC staff has new seismic information that needs to be evaluated since it was not available during the original licensing of current operating plants. The NRC's basis for requesting this information is documented in the initial screening analysis (ADAMS Accession No. ML073400477), and the safety/risk assessment of GI-199 (ADAMS Accession No. ML100270582).*

One commenter [11] argued that the significance of the issue was not based on the new seismic hazard information, as much as it was derived as a direct result of the use of a new and different

model (used in new reactor design reviews) with a new probabilistic/frequency "anchor" point for that model as opposed to the current licensing basis model and SSE probabilistic/frequency anchor point. One commenter [9] stated that the approach employed to developing the GI-199 was inconsistent with the Commission policy since the expectations, regulations, and guidance developed for new reactor designs would not be imposed on the current operating plants. *The NRC staff agrees that the genesis of GI-199 was the result of new seismic hazard information for new reactor licensing under 10 CFR Part 52. However, the GI-199 safety/risk assessment utilized new seismic hazard information (from the USGS 2008 update) and fragility information derived from each plant's IPEEE report to provide a seismic core damage frequency estimate. The safety/risk assessment indicated a potential for significant safety improvements at some plants if seismic risk could be reduced. The NRC staff does not agree that GI-199 is inconsistent with Commission policy, because the request for information in the proposed GL does not impose new requirements for operating plants.*

Two commenters [5, 9] indicated that the information requested in the GL constituted a backfit. One commenter [5] stated that the GL was effectively circumventing the purpose and intent of the backfit rule and that the backfit cost-benefit analyses should include all phases, including the cost of the analyses. Another commenter [9] stated that requiring licensees to use the GMRS model, as opposed to their current licensing basis model, was a backfit and a backfit analysis should be required on this aspect of the request before it could be imposed. *The NRC staff notes that this is a request for information under 10 CFR 50.54(f) and is not imposing any changes to the design basis as set forth in 10 CFR 50.109. Any resulting backfit analysis will follow the regulatory analysis guidelines.*

One commenter [22] requested a reference to regulations or guidance that specifies the use of 10^{-5}/year absolute risk as an acceptable level of seismic risk and to confirm that achieving risk reduction to SCDF lower than this criterion is a goal and not expected from all plants. Two commenters [10, 16] stated that the use of 10^{-5}/year absolute risk, as opposed to the change in risk, (or High Confidence of Low Probability of Failure below the RLE) in the GL as the criterion for licensees to submit plans for actions/modifications to lower seismic risk is contrary to the backfit/regulatory guidance and the Commission's safety goal policy statement. *The NRC staff agrees that this criterion is not established in regulations or guidance for current plants and that the backfit/regulatory guidance uses a change in risk instead of absolute risk. However, this screening criterion has been removed from the 50.54(f) letter.*

One commenter [5] identified other reasons for not pursuing the GL stating the GL is politically motivated and wasteful, that the focus should be on any individual site(s) where the seismic design is inadequate, and suggested that the NRC focus on risk significant activities in order of importance. *The NRC staff agrees that the resolution schedule should be informed by the safety significance of the information collected in the early phase of the response.*

Another commenter [13] stated that the NRC staff has not tied its SCDF assessment to the particular SSCs at risk from seismic damage and failure. *The NRC staff notes that the GI-199*

assessment was only intended to identify the potential safety significance of the issue to determine the appropriate next steps, which will include assessing particular SSCs by licensees.

One commenter [5] requested that the NRC provide additional information regarding what objective measure of seismic hazard actually changed that resulted in the need for the requested new analyses. *The NRC's basis for requesting this information is documented in the safety/risk assessment for GI-199.*

One commenter [16] stated that it appears to be counterproductive to require all plants to use Addendum A (or even Addendum B) of the PRA standard, thus forcing all plants into a "guaranteed re-work" when future clarifications will be available. *The NRC staff disagrees. The information request is based on current standards that have been available for a number of years. There is no requirement to update to any future standard for the purpose of meeting this information request.*

Comments Seeking Information on the Risk Methods Being Cited as Part of the Generic Letter and the Associated Quality of those methods

Two commenters [16, 23] questioned the level of quality identified in the GL for the PRA. One commenter noted that the GL indicates consistency with the Supporting Requirements (SRs) of ANS/ASME RA-Sa-2009 and RG 1.200, for the development of a SPRA, without specifying any Capability Categories and therefore this allows Capability Category I to be acceptable for most, if not all, SRs. The other commenter stated that the application of RG 1.200 and the ASME PRA Standard represents a level of pedigree well beyond that needed for determination of the safety significance of the new seismic information. *As set forth in RG 1.200, which capability category is needed to be met for each technical requirement is dependent on the specific application. In general, the NRC staff anticipates that current good practice, (i.e., Capability Category II of the ASME/ANS standard), is the level of detail that is adequate for the majority of applications. However, for some applications, Capability Category I may be sufficient for some requirements, whereas for other applications it may be necessary to achieve Capability Category III for specific requirements. For the purposes of resolving GI-199, the NRC staff will continue to work with industry and stakeholders on this issue, (i.e., to clarify whether Capability Category I would be appropriate for some supporting requirements).*

One commenter [16] suggested alternative options to requiring peer reviews, including: using the ASME/ANS PRA Standard as guidance only, allowing licensees to perform self-assessments against the SRs in the ASME/ANS PRA Standard, Part 10 (SMA), or having an independent seismic expert review of the SMA. The commenter [16] also requested the NRC to provide a justification as to why this is considered to be a RG 1.200 risk-informed application since the commenter infers the intent of the GL, as supported by the backfit discussion, is to identify vulnerabilities and does not require any explicit (or implicit) plant change. *The NRC staff disagrees. The NRC staff believes that the responses to the 50.54(f) letters should address appropriate industry consensus standards, as endorsed by NRC guidance documents. The peer review provisions are contained within the PRA standard.*

One commenter [6] stated that the information in the IPEEEs are too flimsy and unreliable to be mined for any probative value for GI-199 and that the NRC has more recent, applicable, reliable information with which to make regulatory decisions for GI-199. *The NRC staff believes that while the IPEEEs were sufficient for providing the information needed in the GL 88-20 request, the current request is more comprehensive and uses the latest available information, standards, and guidance.*

One commenter [16] stated that the proposed GL puts emphasis on the need for a better consideration of non-seismic failures and human performance during a seismic event and noted that treatment of seismic-related Human Reliability Analysis is one of the more controversial issues in the current version of the PRA Standard. *The NRC staff agrees and will continue to work with standards organizations towards improving PRA standards and staff guidance.*

Three commenters [18, 22, 24] stated or inferred that the information and process described in the proposed GL is overly prescriptive and eliminates consideration of potential alternatives that could meet the intent of the GL, such as using other industry-accepted methods for performing an SMA, including a deterministic approach per EPRI NP-6041-SL, "A Methodology for Assessment of Nuclear Power Plant Seismic Margins," or the methods contained in PG&E's License Amendment Request 11-05. *The NRC staff will continue to work with industry and stakeholders to identify and resolve methods and guidance issues.*

Comments not Directly Related to the Information Request in the Proposed Generic Letter

One commenter [2] questioned the approach to seismic analysis used in siting plants and specifically questioned whether the vent towers in US nuclear power plants are required to have stabilizing shock absorbers such as those installed at Fukushima that still experienced severe loading issues, and also raised a concern that the North Anna nuclear power plant was allowed to be built on an active fault. *NRC is considering actions to improve the reliability of boiling water reactor Mark I and II Containments, as presented in the NTTF Recommendation 5. One consideration would be the ability of the vent system to withstand applicable stresses from the seismic event and venting operations. The process for licensing nuclear power plants, including North Anna, includes an evaluation of the seismic characteristics of the site and a finding as to the acceptability of the design. The NRC staff notes that the process for evaluating new information will be addressed under the NTTF Recommendation 2.2.*

Another commenter [20] requested that the NRC expeditiously make public all data/information associated with the August 2011 earthquakes at Mineral, Virginia, including Dominion Generation's information, and ensure open access to other relevant information. *The NRC staff agrees with the intent of the comment and has made publicly available the information/data it has related to the August 2011 earthquakes in Virginia.*