

OFFICE OF NUCLEAR REACTOR REGULATION

LIC-208	Process for the Ongoing Assessment of Natural Hazards Information
Volume 200	Licensing Support
Approved By:	Robert M. Taylor
Date Approved:	November 20, 2019
Effective Date:	November 20, 2019
Certification Date:	November 20, 2024
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Summary: This is the initial issuance of LIC-208, "Process for the Ongoing Assessment of Natural Hazards Information" it institutionalizes a defined structure and procedures to implement the process for the ongoing assessment of natural hazards information (POANHI).	
Training:	None
ADAMS Accession Number: ML19210C288	

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Office Instruction: LIC-208, "Process for the Ongoing Assessment of Natural Hazards Information" Dated: November 20, 2019

ADAMS Accession No: ML19210C288 Obtain concurrences as necessary.

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1. POLICY

It is the policy of the Office of Nuclear Reactor Regulation (NRR) to implement a process for the ongoing assessment of natural hazards information (POANHI) in accordance with the staff requirements memorandum (SRM), SRM-SECY-16-0144, "Proposed Resolution of Remaining Tier 2 and 3 Recommendations Resulting from the Fukushima Dai-ichi Accident," dated May 3, 2017 (ADAMS Accession No. ML16039A175). This SRM approved the staff's recommendations for the development of the process enhancements described in SECY-16-0144, dated December 29, 2016 (ADAMS Accession No. ML 16286A586), for ongoing assessment of natural hazards information. This office instruction institutionalizes a defined structure and procedures to implement the POANHI as described in Enclosure 2 to SECY-16-0144.

2. OBJECTIVES

This office instruction (OI) provides details regarding POANHI roles and responsibilities; development and maintenance of the knowledge base and cumulative information record, referred to as the Natural Hazards Information Digest (NHID); the structure of technical engagement and coordination activities; the conduct of the information aggregation when new data, models, or methods arise; and the significance assessment processes to determine the technical and regulatory impacts of new information relevant to external hazards for nuclear facilities. The process also includes procedures to ensure timely updates to the cumulative information record and knowledge base, stakeholder interactions, and periodic reporting. To ensure the successful execution of the POANHI framework, the staff developed and will maintain and supplement the program with additional documentation and procedures, as appropriate.

The POANHI framework has the following key attributes:

- **Enhances safety:** A large and varied set of organizations and researchers evaluate natural hazards in the United States. These evaluations could identify new information that affects a single plant or multiple sites. The proposed framework enhances the ability of the NRC to (1) identify new external hazard information affecting individual sites or larger geographic regions that may affect the ability of a site, or sites, to protect against and/or mitigate the hazard and (2) determine whether the information has potential risk and safety significance.
- **Efficiently integrates with existing processes:** The POANHI framework integrates with existing regulatory activities (e.g., collects information from research, oversight activities and operating experience (OpE)), uses Nuclear Regulatory Commission's (NRC's) risk-informed regulatory framework, requires coordination between relevant regulatory offices, and facilitates transfer of issues to the appropriate regulatory program. By using existing infrastructure and expertise (e.g., knowledge gained in previous work, existing resources and programs), the POANHI offers enhanced efficiency gains for infrastructure and in staff capabilities. In addition, the proposed

framework better integrates NRC processes with the broader natural hazard's technical community.

- **Provides stability and predictability:** Stability of the POANHI framework is ensured by institutionalizing and clearly documenting the systematic process in this office instruction and integrating this OI with other instructions and documents, as necessary (e.g., other Office of Nuclear Reactor Regulation (NRR) office instructions, Office of Nuclear Regulatory Research (RES) office instructions, RES user needs or research plans). In addition, to promote technical consistency and predictability, POANHI involves an interoffice technical advisory committee, when warranted. While licensees' regulatory responsibilities related to identifying and evaluating new information have not changed, this office instruction relies primarily on internal NRC resources, particularly the External Hazards Center of Expertise (EHCOE) staff, for implementation. The framework embedded in this office instruction enhances the technical capabilities of the cohort of subject matter experts in the EHCOE, as well as their RES counterparts, who will remain involved in the broader scientific and technical community through deliberate engagement and frequent coordination with external organizations. This will allow the staff to proactively seek out new hazard information and assess its potential impacts on site safety by comparing updated information to existing hazard evaluations for the fleet or individual plants, as appropriate. By leveraging existing staff resources, requests for action and information from licensees will be limited to situations in which the staff has demonstrated the potential significance of new information through a deliberate and systematic assessment. In addition, partnering with external organizations (including other Federal agencies) will increase consistency and reliability in the treatment of natural hazards and permit overall cost-savings.

3. **BACKGROUND**

The NRC's Near-Term Task Force (NTTF) was established shortly after the Fukushima Dai-ichi accident and was directed by the Commission to conduct a methodical and systematic review of NRC processes and regulations and provide recommendations to the Commission on whether the agency should make changes to its regulatory program in response to the accident. NTTF Recommendation 2.2 (R2.2) recommended that the NRC initiate a rulemaking to require that licensees confirm seismic and flooding hazards every 10 years. Specifically, R2.2 recommended that licensees address any new and significant information and, if necessary, take actions that could include updating the design basis for structures, systems, and components (SSCs) important to safety to protect against the updated natural hazards. Other studies conducted after the Fukushima accident also include recommendations that emphasized the importance of assessing new information. For example, finding 3.1 of the National Academies of Science report, "Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants," dated July 2014 states: "the overarching lesson learned from the Fukushima Dai-ichi accident is that nuclear plant licensees and their regulators

must actively seek out and act on new information about hazards that have the potential to affect the safety of nuclear plants.”

The NRC staff’s subsequent assessment concluded that the NRC can meet the intent of R2.2 using an approach other than rulemaking. In SECY-15-0137, “Proposed Plans for Resolving Open Fukushima Tier 2 and 3 Recommendations,” Enclosure 2 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15254A008), the staff found that current practices to assess new natural hazard information are generally effective, but the staff identified a number of ways to enhance existing processes. In addition, the staff recognized that there is no dedicated NRC process that systematically identifies new natural hazard information as it becomes available and assesses its potential risk significance in a timely manner. In SECY-15-0137, staff identified the following opportunities to enhance existing practices:

- Ensure more timely identification and assessment of new information (e.g., data, models, and methods)
- Facilitate a methodical assessment of the cumulative effect of new data, models, and methods that accrue over time
- Update existing hazard models with new information found to be significant so they are readily available.

As a result, in SECY-15-0137, staff proposed to enhance existing processes and develop associated staff procedures to ensure that staff proactively and routinely aggregate and assess new natural hazard information. The staff proposed that the enhanced internal process would leverage and augment existing programs and agreements with external organizations. The Commission approved the development of the process to address new natural hazards information described in SECY-15-0137 in a SRM dated February 8, 2016 (ADAMS Accession No. ML16039A175).

The staff subsequently provided details and recommended enhancements associated with the process for assessing new natural hazards information in Enclosure 2 of SECY-16-0144. The Commission approved the staff’s recommendation to implement the enhancements described in Enclosure 2 of SECY-16-0144 in an SRM dated May 3, 2017 (ADAMS Accession No. ML17123A453).

4. BASIC REQUIREMENTS

The key elements of the framework for addressing new natural hazard information are shown in Figure 1 and comprise three primary components:

1. **Knowledge base activities**, which include (1) recent activities to develop the NHID that will be used by the staff to collect and archive materials that have been docketed by licensees or developed by staff as part of activities associated with NTF Report Recommendations 2.1 and 2.3 (R2.1/2.3), new reactor reviews, and other regulatory activities related to natural hazards, and (2) longer-term activities to maintain and update the cumulative information record within the NHID.

2. **Active technical engagement and coordination**, which involves leveraging and enhancing ongoing interactions with internal and external partners (including other Federal agencies, academia, industry, regulators from other countries, and other technical and scientific organizations) to ensure that staff routinely and systematically brings together and assesses pertinent new hazard information from a variety of sources.
3. **Assessment activities**, which include aggregation and evaluation of the significance of new information (e.g., data, models, and methods) as well as referral of potentially significant issues to appropriate NRC regulatory programs.

The basic requirements for the three primary components identified above are provided in the following sections.

4.1.1. Knowledge Base Activities

4.1.2. Overview

The knowledge base activities provide the foundation for the POANHI framework. The development of the knowledge base involved the compilation and organization of currently available data, models, documentation, and other insights into a centralized database, the NHID, to ensure ongoing availability for NRC staff use. The NHID was designed by staff in the NRC's Office of Research (RES) and implemented by Idaho National Laboratory (INL) to provide a digital infrastructure for compiling and storing natural hazards information related to nuclear power plant sites.

To develop the NHID, the NRC staff leveraged information associated with implementing lessons learned associated with the 2011 accident at the Fukushima Dai-ichi nuclear power plant. NTF Report Recommendations 2.1 and 2.3 (R2.1/2.3) were associated with seismic and flooding hazards at nuclear power plants. Recommendations 2.1 and 2.3 led to licensees reevaluating seismic and flooding hazards for their respective sites and also performing walkdown activities at their sites to identify and address vulnerabilities associated with these hazards. The NHID captures documentation provided by licensees in response to site hazard reevaluations and plant walkdowns, in addition to the NRC staff assessments associated with those activities. In addition to leveraging information associated with R2.1/2.3, the staff also used insights gained from the Individual Plant Examination of External Events (IPEEE) Program, and new reactor reviews (including software and models) for initial development of the NHID. This ensures the agency benefitted from resources expended as part of previous hazard evaluations. As part of the POANHI program implementation, the staff will maintain and routinely update the NHID to reflect new information collected as part of activities performed within the POANHI framework, as well as other regulatory activities and operating experience. In addition to supporting the activities associated with the POANHI framework embedded in this office instruction, the staff will use the NHID to also ensure that information is available and can be used to support other agency activities, including:

- assisting the agency in responding to emergent events associated with natural hazards by promptly providing relevant information;
- engaging external stakeholders, including responding to allegations and petitions;
- evaluating natural hazard-related inspection findings under the NRC's "Significance Determination Process for Power Reactors", in NRC Inspection Manual Chapter 0609 (ADAMS Accession No. ML18187A187);
- formulating and implementing research plans associated with natural hazards; and
- updating regulatory and staff guidance.

4.1.3. Knowledge Base Maintenance

Staff will maintain the NHID to reflect the information collected, aggregated, and assessed as part of the POANHI framework as well as from other regulatory programs and operating experience. The infrastructure of the NHID will be maintained in combination with other INL Safety Portal applications within a RES maintenance agreement with INL. Digest maintenance will include updating site-specific information and hazard models as well as relevant plant-specific information, as needed. Data can be added or removed only by authorized users for maintenance of the information/knowledge in the NHID. In addition, staff will use the NHID to maintain supporting documentation and associated information, referred to as, "cumulative information records," for potentially significant topics. The cumulative information records will document the accumulation of new natural hazards information over time (i.e., occurrences of extreme natural phenomena; changes to the state of practice, including new data, models, and methods) and the disposition of new natural hazards information. The cumulative information records will facilitate the aggregation of information and significance assessments and allow staff to identify when referral to other regulatory programs is warranted based on hazard significance and prior precedent.

4.2. Active Technical Engagement and Coordination

The active technical engagement and coordination component of the proposed framework involves interactions with a variety of stakeholders, including internal and external organizations. These activities facilitate identification of new natural hazards information. Specifically, the staff will periodically coordinate and document the outcomes of meetings during which NRC and its stakeholders will review and discuss the evolution in knowledge (e.g., changes in data, models, and methods). In addition, the staff will continue to remain engaged with the broader technical and scientific community, which will ensure the staff are aware of, and are contributors to, advances in data, models, and methods (including opportunities for leveraging more sophisticated models and refinements).

A key component of the POANHI framework is stakeholder interactions. These internal and external stakeholders include the public, industry, licensees and prospective applicants, partner federal agencies, professional technical and scientific organizations, academic research

institutions, and international counterparts, among others. Consistent with current NRC practices, the staff will engage external stakeholders at appropriate times throughout the process to assess natural hazards information (e.g., via public meetings).

Active technical engagement and coordination may include coordination activities, meetings, periodic reporting, and stakeholder interactions. These technical engagement and coordination activities may be part of or separate from the cumulative information record development as part of maintaining the knowledge base and the assessment of natural hazard information activities that are also part of POANHI.

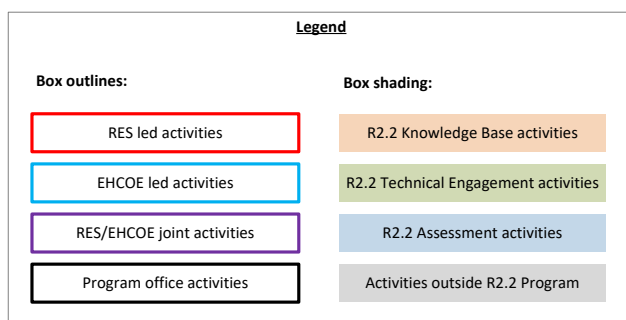
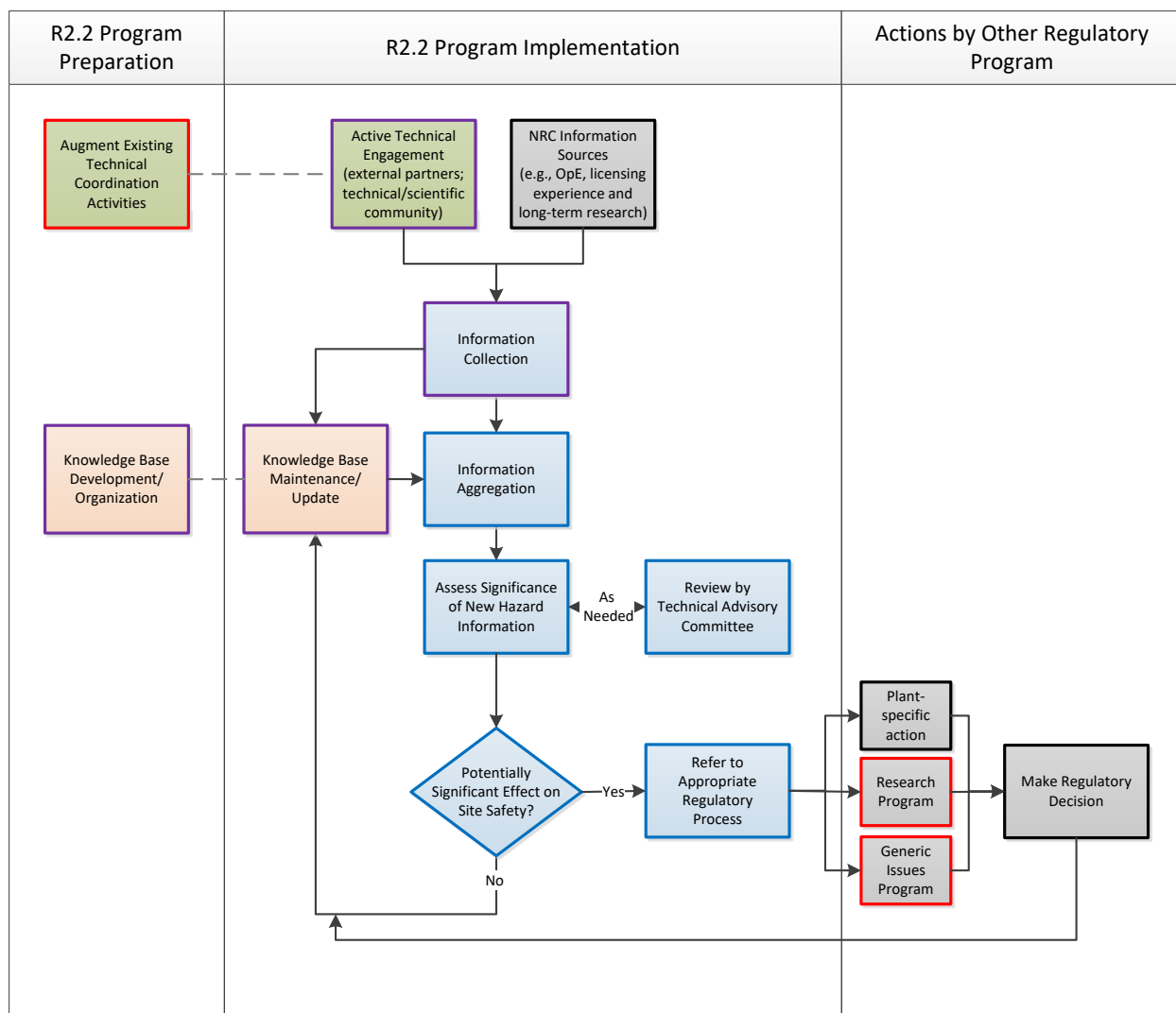


Figure 1: Key Elements of Framework for Assessment of Natural Hazards

As part of the POANHI program implementation and maintenance activities, the staff will enhance existing technical coordination activities, participation, engagement, and partnerships; and will establish new agreements, if necessary, to ensure the appropriate frequency of interactions between the staff and external organizations, which include but are not limited to the following:

- Federal partner agencies (e.g., Department of Energy (DOE); United States Geological Survey (USGS); National Oceanic and Atmospheric Administration (NOAA); United States Army Corps of Engineers (USACE); Federal Energy Regulatory Commission (FERC); United States Bureau of Reclamation (USBR); Federal Emergency Management Agency (FEMA); National Institute of Standards and Technology (NIST); Defense Nuclear Facilities Safety Board (DNFSB));
- Industry stakeholders (e.g., Nuclear Energy Institute (NEI), Electric Power Research Institute (EPRI));
- Federal Advisory Committees and Interagency Working Groups, of which the NRC may be an active participant or observer (e.g., Advisory Committee on Water Information (ACWI)/Subcommittee on Hydrology (SOH); National Academies of Sciences, Engineering, and Medicine (NASEM); U.S. Global Change Research Program (USGCRP); Office of Science and Technology Policy (OSTP)/Subcommittee on Disaster Reduction (SDR); National Science Foundation (NSF);
- Professional societies and consensus standards organizations (e.g., American Nuclear Society (ANS); American Geophysical Union (AGU); Geological Society of America (GSA); Seismological Society of America (SSA); Association of Environmental and Engineering Geologists (AEG); American Meteorological Society (AMS); American Society of Civil Engineers (ASCE); Association of State Dam Safety Officials (ASDSO)); and,
- International counterparts (e.g., Canadian Nuclear Safety Commission, Organization for Economic Co-operation and Development/Nuclear Energy Agency (NEA), International Atomic Energy Agency (IAEA); Nuclear Regulatory Authority of Japan); French Institute for Radiological Protection and Nuclear Safety.

This systematic engagement effort ensures the staff has the appropriate access to new information and maintains awareness of developments and activities that take place external to the NRC related to natural hazards. In general, this external engagement enhances staff capabilities while minimizing burden on licensees.

Examples of engagement and coordination activities that the staff is responsible for includes the NRC-DOE Natural Phenomena Hazards (NPH) meeting and the annual probabilistic Flood Hazard Assessment (PFHA) Research Workshop. The NPH meeting is held every couple of years and provides a unique opportunity for the NRC staff to engage in dialog with DOE and industry regarding developments in natural hazards information and its use in regulatory activities. In addition, the NRC hosts the annual PFHA Research Workshop at NRC

Headquarters. The workshop is open to the public and brings together NRC staff, federal agencies, industry, and other external organizations involved in flood hazard assessment, flood risk assessment, and flood protection/mitigation research. Examples of professional conferences that focus, in part, on natural hazards include meetings of the American Meteorological Society, Seismological Society of America, Geological Society of America, and the American Geophysical Union. An example of NRC interactions with interagency working groups is staff participation on the Advisory Committee on Water Information, Subcommittee on Hydrology (ACWI/SOH). This group conducts regularly scheduled meetings with water information users and professionals advising the Federal Government hydrology issues, including flooding hazards. NRC also participates in the Interagency Committee on Dam Safety (ICODS) and the Office of Science and Technology Policy Subcommittee on Disaster Reduction (SDR). In addition, the staff will continue to support, enhance, and, as appropriate, develop new agreements and interactions with cognizant partner agencies (e.g., USGS, NOAA) to address issues related to natural hazards in the United States.

4.3. Assessment of hazard information

4.3.1. Overview

The overall objective of the assessment of hazard significance is to determine if new information related to natural hazards has the potential to significantly affect the safety at a US nuclear power plant and associated facilities such as independent spent fuel storage installations. The assessment of hazard information includes the collection and aggregation of new hazard information; a significance assessment; documentation; referral to the appropriate regulatory program, as necessary; and stakeholder interactions.

Assessment activities are intended to require limited resources and use information contained within the knowledge base to perform a limited scope quantitative or qualitative assessment to determine if the new information results in a change in hazard that is potentially significant. The assessment will be performed by subject matter experts in the EHCOE, augmented, as needed, by staff from other NRC organizations. The division director responsible for the EHCOE may, as needed, convene a technical advisory committee to assess hazard significance and to recommend appropriate next steps to address the issue.

New hazard information determined to be significant will be forwarded to the OpE Clearinghouse to be screened and processed in accordance with LIC-401, "NRR Reactor Operating Experience Program," (available at <https://usnrc.sharepoint.com/teams/NRR-OI-Listing/Lists/OI%20Listing/AllItems.aspx>). This includes the opening of an Issue for Resolution (IFR) when required. The IFR evaluation may result in referring or "handing off" the information to the appropriate regulatory program office which will decide whether and how regulatory analysis and decision-making should proceed, consistent with existing regulatory processes (e.g., backfit, operability). When needed, the agency should issue requests for additional information on a site-specific basis or generically to support its decisions. See Section 4.5, "Reactor OpE Process-Apply of LIC-401" for more details. The staff will follow the appropriate NRR office instructions that are available at <https://usnrc.sharepoint.com/teams/NRR-OI-Listing/Lists/OI%20Listing/AllItems.aspx>.

[Listing/Lists/OI%20Listing/AllItems.aspx](#) if it is determined the agency should issue requests for additional information on a site-specific basis or generically¹. In addition, the staff will document the results of the significance assessment in updates to the cumulative information records within the NHI Digest and a periodic (e.g., annual) report to be released publicly. The program office to which the potentially significant hazard information is referred to should document the final disposition of the information and notify the EHCOE staff for inclusion of the disposition in the cumulative information records within the NHID. In addition, EHCOE may be re-engaged to support the responsible program office in making a final determination.

4.3.2. Information collection and aggregation

As part of the program implementation, staff will collect information from the ongoing technical coordination and engagement activities, as well as other NRC sources (e.g., operating experience, licensing experience, and research activities). When the staff identifies new hazard information, it will assess the new information for potential significance in the context of previously accumulated hazard information and past precedent of significance, rather than in isolation. This assessment will evaluate the change in the hazard represented by the aggregated information and consider available risk insights to determine whether the change in the hazard has a potentially significant effect on plant safety.

The assessment will be performed by subject matter experts in the EHCOE, augmented, as needed, by staff from other NRC organizations. Assessment activities are intended to require limited resources and use information contained within the knowledge base to perform a limited scope quantitative or qualitative assessment to determine if the change in hazard is potentially significant.

Examples that would lead NRC staff to initiate POANHI activities and begin screening of information:

1. New information results from the occurrence of a significant natural hazard-related event at or in the region of a nuclear power plant site (e.g., event that exceeds a plant's design basis or that results in adverse effects on the plant).
2. New information is the result of an observation (e.g., identification of a new fault structure near an NPP site or information suggesting the downgrade of a dam located near an NPP site)
3. New, modified, or developing methodology results in a possible change in hazard determination, or design or licensing basis of an NPP.

¹ As discussed in LIC-401, the operating experience program ensures timely short-term evaluations are performed to promptly initiate regulatory actions aimed at resolving immediate safety issues and precluding or correcting similar conditions at other facilities. In such instances request for additional information may not be appropriate before a regulatory action is initiated (e.g., issuance of Orders).

4. New information suggests a potential for the information to result in an increase in hazard that is consequential (i.e., the increase in hazard could adversely affect the ability of a plant's structures, systems, and components (SSCs) to perform their intended safety functions) to the site.
 - Note: This criterion involves application of staff judgement regarding the potential effects of the new information; this criterion is not intended to require detailed calculations.
5. The new information is generally recognized by the informed technical community, which includes other Federal agencies or industry standard committees.
 - Note: This criterion is intended to preclude consideration of new information that is not of sufficient pedigree to warrant expenditure of agency resources. Establishing whether new information is recognized by the informed technical community will involve application of staff judgement based on, for example, literature searches as well as consultation with internal and external subject matter experts (e.g., federal partners and representatives from academia).
6. The effect of the new information can be adequately determined (i.e., it does not involve phenomena or other uncertainties that would require long-term studies and/or experimental research to establish the risk or safety significance).
 - Note: The purpose of this criterion is to eliminate those issues requiring long-term studies. Long-term studies should be conducted and managed by NRC/RES rather than under POANHI. Generally, if a study greater than 3 to 6 months is needed, then the issue does not meet this criterion. Upon completion of the long-term study, an issue could be reconsidered under POANHI. However, issues identified as requiring long-term study will be used to inform and prioritize research activities associated with natural hazards. POANHI will use established NRC processes, consistent with NRR Office Instruction COM-100, for requesting RES to conduct research with due consideration to mission priorities and budgetary constraints.
7. Consideration of the new information may potentially involve review, analysis, or action by the NRC or affected licensees.
 - Note: This criterion is intended to ensure that identified information may result in actions to address potential weaknesses and deficiencies in existing regulations and guidance affecting safety and security. If it becomes apparent that no licensee action will be needed, then further assessment is not needed.

4.3.3. Significance Assessment

The assessment of hazard significance will involve a determination of whether the new information indicates that the hazard has the potential to adversely affect the capability of a nuclear power plant's SSCs to perform their intended safety functions. To assess the potential

significance of an increase in hazard severity, staff will use available information and risk insights. Existing information to assist in the assessment of new hazard data, models, and methods, may include the outcomes of activities associated with NTTF R2.1, including available seismic capacities, available physical margin for flooding, and cliff-edge effects.

Depending on the nature of the new information, the assessment may be based on site-specific evaluations, consider groups of representative sites (e.g., based on geographic location), or use generic assessments. The assessment will be performed by subject matter experts in the EHCOE, augmented, as needed, by other NRC staff, including risk assessment staff in NRR and RES. As previously noted, assessment activities are intended to require limited resources and use information contained within the knowledge base to perform a limited scope quantitative or qualitative assessment to determine if the change in hazard is potentially significant.

- **For issues amenable to quantification of risk:** Use readily available information (e.g., estimates of composite plant capacity based on the previously performed IPEEE and NTTF R2.1 analyses) to assess impacts of plant response in terms of overall plant risk, and determine whether additional regulatory action should be considered.
- **For issues not amenable to quantification of risk** (e.g., because models are not readily available to support risk quantification or because detailed assessments are not judged necessary), consideration should be given to the following:
 - Likelihood of the event
 - Warning time available
 - Identification of vulnerabilities and actions to address them
 - Existence of cliff-edge effects
 - Maintenance of defense in depth, including the balance between protection and mitigation

If the EHCOE staff finds that the new hazard information has a potentially significant effect on plant safety (e.g., that it could lead to the need for a generic or plant-specific backfit or other regulatory action), they will coordinate with the OpE staff to determine the need for additional actions in accordance with LIC-401 (typically via the Technical Review Group (TRG) process).

If the staff finds that the new hazard information is of low safety significance the staff will document the results of the assessment in updates to the cumulative information records contained in the NHID. These updates will include a short summary of the new hazard information and the staff's basis for concluding that the new hazard information is not significant from a plant safety perspective.

4.3.4. Referral to Other Regulatory Programs

The overall objective of the assessment of hazard significance is to determine if the new information could have a potentially significant effect on plant safety. If staff finds that the new hazard information has a potentially significant effect on plant safety, it will refer the issue to appropriate regulatory programs in accordance with LIC-401 "NRR Reactor Operating Experience Program," for detailed assessment and further action. Regulatory programs for these referrals include:

- Transfer of an issue to the relevant program office for resolution (e.g., via plant-specific assessment and regulatory action) in accordance with Management Directive (MD) 8.4,
- Transfer of the issue to the Generic Issues Program, if the new information could potentially affect safety at multiple plants and the issue meets other Generic Issues Program screening criteria in accordance with MD 6.4 "Generic Issues Program;" or,
- Identification of the need for further research if a better understanding of the new information could improve staff's understanding of the hazard and the resulting potential effects on plant safety.

The relevant program office will decide if the agency should issue requests for additional information, and whether to issue these on a site-specific basis in accordance with MD 8.4 or generically in accordance with MD 6.4. In the event that a licensee identifies an issue that may affect the operability of SSCs, NRC inspectors will follow Inspection Manual Chapter 0326, "Operability Determinations," to evaluate a licensee's determination of plant operability. The program office will also decide whether and how regulatory analysis and decision making should proceed, consistent with existing regulatory processes (e.g., backfit, forward fit, operability determinations). Finally, the program office will work with the EHCOE staff to document the disposition of the information and communicate that information back to the EHCOE staff and management for inclusion in the cumulative information record.

4.3.5. Documentation

The staff will document the results of the assessment of hazard information. The documentation should include updates to the cumulative information records contained in the NHID and a summary of results in the staff's annual report described in Section 4.4 of this OI. The results of the assessment of hazard information will also be used to inform updates to regulatory guidance.

4.3.6. Stakeholder Interactions

Consistent with current NRC practices, staff will engage external stakeholders at appropriate times in the process (e.g., via public meetings and public comment periods). This engagement will include developing communications plans, as appropriate, for new hazard information impacts and safety significance.

NRC staff will periodically coordinate, document, and archive the outcomes of meetings during which NRC and the aforementioned groups will review and discuss the evolution in knowledge (e.g., changes in data, models, and methods). Archived documentation will be stored in ADAMS for future reference.

4.4. Documentation and Reporting

Periodic reporting is an important component for communicating the status of ongoing POANHI activities to the various stakeholders. NRC staff will periodically coordinate, document, and archive the outcomes of meetings during which NRC and external organizations will review and discuss the evolution in knowledge (e.g., changes in data, models, and methods). Archived documentation will be stored in ADAMS for future reference.

The EHCOE staff implementing POANHI will produce an annual report outlining plans for the upcoming year and summarizing the previous year's activities. This annual report is an important tool for transparency and accountability to both the internal and external stakeholders. This annual report should include staff actions related to the three primary activities associated with POANHI: 1) knowledge base development; 2) active technical engagement and coordination; and 3) assessment of hazard information. The specific details to be included in the Annual POANHI report for each of these activities are described in greater detail in the following sections.

Additional reporting may be warranted during the year as events or new information dictates. This additional reporting may include management briefings, public meetings, conference presentations and attendance, participation in working groups, or other interactions where reporting the work of POANHI may be pertinent.

4.4.1. Knowledge Base Activities

The annual report should summarize any changes or updates made to the NHID in the previous year. This should include issues or information added to the cumulative information record and the disposition of those issues or information, if available. If the final disposition of the issue or information identified during the year is not available, the annual report should describe plans for the coming year to bring the issue to resolution.

4.4.2. Active Technical Engagement and Coordination

The EHCOE staff implementing POANHI will work closely with RES staff and other NRC offices to identify opportunities for active technical engagement and coordination activities. The POANHI annual report should summarize all technical engagement and coordination activities from the previous year, including public meetings, conference attendance and presentations, working group participation, and other engagement or coordination activities. The POANHI annual report should also identify planned future engagement and coordination activities.

4.4.3. Assessment of Hazard Information

The POANHI annual report should describe the completed and in-progress assessments of hazard information, including the final disposition, if available. The EHCOE staff responsible for implementing POANHI should also provide lessons-learned from the assessment and, if applicable, document areas of improvement. Specifically, the staff should consider changes to the assessment of hazard information that would increase efficiencies or organizational effectiveness, or better leverage existing agency processes in the implementation of POANHI.

5. RESPONSIBILITIES AND AUTHORITIES

Primary responsibility for executing the POANHI will reside with the EHCOE in NRR with significant contributions and support from staff in the Office of Nuclear Regulatory Research (RES). Additional support and contributions from the Division of Reactor Oversight (DRO) and the Division of Risk Assessment (DRA) in NRR as well as other NRC offices is needed to support POANHI activities. Each office has specific roles and responsibilities for the three primary components of POANHI.

5.1. External Hazards Center of Expertise

EHCOE centralizes functions and management of external hazard evaluations in support of licensing work in the New and Operating Reactor business lines while ensuring effective and efficient use of agency resources in executing the mission. These evaluations include the review of a wide-range of natural hazards caused by the atmosphere, flood sources, and ground shaking; and the review of potential man-made hazards. EHCOE includes the Agency's Dam Safety Officer responsibilities in accordance with SECY-91-193, "Dam Safety Program Plan," (Accession No. ML12255A651). EHCOE staff perform all hazard evaluations contained in Chapter 2 of the Standard Review Plan (NUREG-0800). EHCOE is staffed by technical experts capable of assessing potential climatology-driven hazards (snow loads, tornado and hurricane wind loads, etc.), atmospheric dispersion of radionuclides, local intense precipitation and associated site drainage, all potential flood-related hazards (rivers, streams, dam failure, etc.), evaluation of the safety-related water supply, all potential coastal hazards (storm surge, tsunami, etc.), groundwater flow and radionuclide transport, potential for geologic hazards (e.g., faulting, karst, and subsidence), potential for ground shaking (i.e., seismology and geophysics), and stability of subsurface materials, foundations, and slopes (geotechnical engineering).

Individual responsibilities for EHCOE staff in support of POANHI are as follows:

Director, Division of Engineering and External Hazards

- Maintains overall responsibility for POANHI activities
- Signs relevant documents:
 - Yearly program documents
 - Reports transferring issue or information between programs
- Assigns membership to Technical Advisory Committee (in consultation with BCs as well as RES/DRA and RES/DE division management)

Senior Level Advisor, Division of Engineering and External Hazards

- Reviews technical staff assessments
- Makes recommendations to Division-level management

Branch Chief for External Hazards

- Assigns overall project lead and lead for each technical area
- Oversees/monitors details of implementation
- Interacts and Coordinates with counterpart BCs with involved staff (e.g. RES, etc.)
- Develops communications plans as appropriate

Technical Staff

- Works with RES counterparts, as needed
- Updates knowledge base
- Maintains cognizance of new hazards information
- Initiates the identification of potential issues
- Recommends use of a Technical Advisory Committee
- Participates in/coordinates meetings and other information collection activities
- Participates in annual/as-needed professional conferences and meetings with external organizations,
- Maintains cognizance
- Recommends to BC the need for assessment activities
- Works with Technical Advisory Committee
- Prepares memos to program offices, as needed
- Prepares annual reports

The component-specific responsibilities for EHCOE staff are described in more detail in the following sections.

5.1.1. Knowledge base activities

The maintenance of the knowledge base and assessment of hazard significance will use subject matter experts from EHCOE, augmented (as needed) by representatives from other offices and external organizations.

The key roles of EHCOE staff with respect to Knowledge Base Activities are knowledge base development, maintenance, and updating.

5.1.2. Active Technical Engagement and Coordination

The key roles of EHCOE staff with respect to Active Technical Engagement and Coordination are consistent with current functions and include frequent participation in internal and external meetings. External meeting participation includes information exchange meetings and other

activities with stakeholders to remain engaged in the broader technical and scientific communities. EHCOE staff will also provide input to research plans for the relevant natural hazard's technical coordination and engagement activities.

5.1.3. Assessment Activities

The key roles of EHCOE staff with respect to Assessment Activities are:

- Information collection
- Information aggregation
- Significance assessment initial screening
- Referral to appropriate regulatory programs

5.2. Director, Division of Reactor Oversight, Office of Nuclear Reactor Regulation

In accordance with LIC-401, the Director of DRO serves as the single point-of-contact to coordinate overall reactor operating experience program activities and to measure effectiveness per MD 8.7, "Reactor Operator Experience Program." If EHCOE identifies an issue using the POANHI framework as having a potentially significant effect on site safety (see Figure 1 above), the Director of DRO is responsible for ensuring timely evaluation of the issue in accordance with LIC-401.

5.3. Office of Nuclear Regulatory Research

The RES staff provide technical advice, tools, and information for meeting the NRC's mission, including resolving safety and security issues, making regulatory decisions, and promulgating regulations and guidance. Specifically, RES plans, develops, and directs comprehensive safety research programs and standards development to 1) support the NRC strategic goals in the design, construction, and operation of current and advanced nuclear power plants and other facilities regulated by the NRC, 2) develop and maintain broad technical expertise, experimental data, numerical simulation analyses tools, and the knowledge bases needed to provide the NRC with the ability to make reliable and technically sound regulatory decisions, and 3) support research relating to probabilistic risk assessments, human factors and human reliability analysis, performance and reliability analysis, movement of radionuclides through environmental systems, operating experience and generic issues, and fire safety.

Division Directors for Involved RES Staff

The key roles for the RES Division Directors (DE and DRA) include the monitoring of division activities and participation in management interactions with the EHCOE Division Director.

Senior Level Advisor Involved RES Staff

- Reviews technical staff assessments
- Makes recommendations to Division-level management

Branch Chief

- Assigns needed staff in each technical area
- Oversees/monitors details of implementation

Technical Staff

- Works with EHCOE Technical Lead as a team member
- Responsible for information collection and maintaining cognizance of new hazards information
- Updates/maintains knowledge base tools (e.g., NHID)
- Organizes meetings/agreements with external organizations (e.g., annually or as needed) in coordination with EHCOE
- Assists in initial assessments of information
- Works with Technical Advisory Committee
- Helps with preparation of annual reports and additional documents (e.g., program transfer memos), as needed

5.3.1. Knowledge Base Activities

The key roles for RES staff with respect to Knowledge Base Activities include knowledge base maintenance and updating. Active technical engagement and coordination.

5.3.2. Active Technical Engagement and Coordination

Consistent with current functions (e.g., standards development), RES will have the primary responsibility for facilitating the technical coordination and engagement between NRC and external organizations. EHCOE and RES staff will jointly participate in the periodic information exchange meetings and other activities to remain engaged in the broader technical and scientific communities. Research plans for the relevant natural hazards will include technical coordination and engagement activities. The key roles for RES staff with respect to Active Technical Engagement and Coordination include leadership and planning for internal and external meetings as well as meeting participation.

5.3.3. Assessment Activities

The key roles for RES staff with respect to Assessment Activities are:

- Information collection
- Technical support
- Receipt of technical issues

5.4. Technical Advisory Committee

The division director responsible for EHCOE may, as needed, convene a technical advisory committee to review and confirm the technical staff's assessment of hazard significance and to recommend appropriate next steps to address the issue. The technical advisory committee will be comprised of senior technical staff with expertise in relevant disciplines (e.g., seismology, geology, geotechnical engineering, hydrology, meteorology, plant operations) and may be expanded, as needed, to include other program offices and relevant personnel to address site-specific issues and ensure that results are presented in a manner that supports an assessment of next steps to be considered by relevant program offices.

The key roles of the Technical Advisory Committee are to:

- Review and Confirm Staff's assessment of hazard significance; and
- Recommend additional actions (in accordance with existing regulatory programs, policies, guidance)

5.5. Program and Regional Offices

Although EHCOE and RES staff will share responsibility for information collection and aggregation, the efforts will likely include input and participation from other NRC offices and the NRC's regional offices. Program and regional offices will also be responsible for information referred to them for further action in accordance with the process outlined in LIC-401, MD 8.4, and MD 6.4. The appropriate regulatory office, in coordination with the regional offices and other internal stakeholders, will make regulatory decisions using existing agency processes.

Key Roles

- Receipt of issues or information
- Determination of need for additional actions (in accordance with existing programs, policies, guidance) Notification of information or issue disposition or resolution to EHCOE

6. PERFORMANCE MEASURES:

The staff will prepare an annual report that outlines plans for the upcoming year and summarizes the previous year's activities. This annual report will include staff actions related to the three primary activities associated with POAHNI: 1) knowledge base development; 2) active technical engagement and coordination; and 3) assessment of hazard information.

NRC timeliness goals for public meeting notifications and summaries apply to all POAHNI activities.

7. PRIMARY CONTACT

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8. RESPONSIBLE ORGANIZATION

DEX

9. EFFECTIVE DATE

November 20, 2019

10. CERTIFICATION DATE

November 20, 2024

11. REFERENCES

1. COMSECY-2011-0093 – “Near-term Report and Recommendations for Agency Actions Following the Events in Japan,” (ADAMS Accession No. ML11186A950).
2. COMSECY-2011-0137 – “Prioritization of recommended Actions to be Taken in Response to Fukushima Lessons Learned,” (ADAMS Accession No. ML11272A111).
3. COMSECY-2015-0137 – “Proposed Plans for resolving Open Fukushima Tier 2 and 3 Recommendations,” (ADAMS Accession No. ML15254A008).
4. Staff Requirements-SECY-2015-0137 – “Proposed Plans for resolving Open Fukushima Tier 2 and 3 Recommendations,” (ADAMS Accession No. ML16039A175).
5. COMSECY-2016-0144 – “Proposed Resolution of Remaining Tier 2 and 3 Recommendations Resulting from the Fukushima Dai-ichi Accident,” (ADAMS Accession No. ML16286A586)
6. Staff requirements-SECY-2016-0144 – “Proposed Resolution of Remaining Tier 2 and 3 Recommendations Resulting from the Fukushima Dai-ichi Accident,” (ADAMS Accession No. ML18282A082)
7. Management Directive 8.7 – “Reactor Operating Experience Program,” September 27, 2012.
8. Management Directive 6.4 – “Generic Issues Program,” January 2, 2015.
9. Management Directive 8.4 – “Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests,” September 20, 2019.

10. NRR Office Instruction COM-100, "NRR Interfaces with RES," (available at <https://usnrc.sharepoint.com/teams/NRR-OI-Listing>.)
11. NRR Office Instruction LIC-400, "Procedures for Controlling the Development of New and Revised Generic Requirements for Power Reactor Licensees," (available at <https://usnrc.sharepoint.com/teams/NRR-OI-Listing/Lists/OI%20Listing/AllItems.aspx>.)
12. NRR Office Instruction LIC-401, "NRR Reactor Operating Experience Program," (available at <https://usnrc.sharepoint.com/teams/NRR-OI-Listing/Lists/OI%20Listing/AllItems.aspx>.)
13. Inspection Manual Chapter 0609, "Significance Determination Process for Power Reactors," (ADAMS Accession No. ML18187A187).
14. Inspection Manual Chapter 0326, "Operability Determinations," September 30, 2019.
15. "Recommendations for Enhancing Reactor Safety in the 21st Century; the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," (ADAMS Accession No. ML 111861807).

Enclosure:

Appendix A - Change History

Appendix A - Change History

Office Instruction LIC-208

Process for the Ongoing Assessment of Natural Hazards Information

LIC-208 Change History - Page 1 of 1			
Date	Description of Changes	Method Used to Announce & Distribute	Training
11/19/2019	This is the initial issuance of LIC-208, "Process for the Ongoing Assessment of Natural Hazards Information" it institutionalizes a defined structure and procedures to implement the process for the ongoing assessment of natural hazards information (POANHI) .	E-mail to NRR staff	None

Enclosure