



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 18, 2015

SECRETARY

COMMISSION VOTING RECORD

DECISION ITEM: SECY-15-0045

TITLE: ISSUANCE OF GENERIC LETTER 2015-01, "TREATMENT
OF NATURAL PHENOMENA HAZARDS IN FUEL CYCLE
FACILITIES"

The Commission acted on the subject paper as recorded in the Staff Requirements Memorandum (SRM) of June 18, 2015.

This Record contains a summary of voting on this matter together with the individual vote sheets, views and comments of the Commission.

A handwritten signature in blue ink, reading "Annette Vietti-Cook", is positioned above the printed name.

Annette L. Vietti-Cook
Secretary of the Commission

Enclosures:

1. Voting Summary
2. Commissioner Vote Sheets

cc: Chairman Burns
Commissioner Svinicki
Commissioner Ostendorff
Commissioner Baran
OGC
EDO
PDR

VOTING SUMMARY - SECY-15-0045

RECORDED VOTES

	APRVD	DISAPRVD	ABSTAIN	NOT PARTICIP	COMMENTS	DATE
CHRM. BURNS	X	X			X	6/1/15
COMR. SVINICKI	X	X			X	5/22/15
COMR. OSTENDORFF	X	X			X	5/28/15
COMR. BARAN	X				X	5/15/15

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Chairman Burns

SUBJECT: SECY-15-0045: ISSUANCE OF GENERIC LETTER
2015-01, "TREATMENT OF NATURAL PHENOMENA
HAZARDS IN FUEL CYCLE FACILITIES"

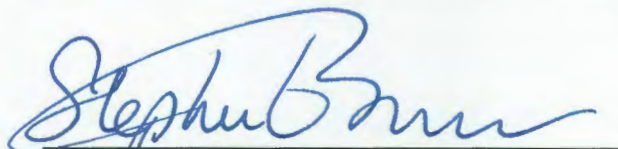
Approved XX Disapproved XX Abstain _____

Not Participating _____

COMMENTS: Below XX Attached XX None _____

I approve issuance of Generic Letter 2015-01, subject to the attached edits. Although I would agree that there are different options available to the staff to collect information from fuel cycle facility licensees in order to assess their compliance with regulatory requirements related to the treatment of natural phenomena hazards, as indicated by Commissioner Svinicki in her vote, I support the staff's decision to address this issue by collecting information through this generic letter. However, I do not approve the inclusion of requested action (2) in the generic letter because, as Commissioner Ostendorff indicated in his vote, licensees are required to address noncompliance and including this second action would be inconsistent with the approach that has been used to address similar issues for power reactor licensees.

I also do not approve the portions of the generic letter, as indicated in my attached edits, which analyze the potential for a backfit in the hypothetical situation where the NRC would take regulatory action requiring licensees to modify their ISA summaries, their ISAs, or to modify their facilities. I find the inclusion of this discussion in the generic letter to be premature.


SIGNATURE

1 June 2015
DATE

Entered in STARS"

Yes ✓

No _____

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, DC 20555-0001

NRC GENERIC LETTER 2015-01: TREATMENT OF NATURAL PHENOMENA HAZARDS
IN FUEL CYCLE FACILITIES

ADDRESSEES

All holders of and applicants for a specific source material license or construction permit for large quantities of uranium hexafluoride under Title 10 of *the Code of Federal Regulations* (10 CFR) Part 40, "Domestic Licensing of Source Material."

All holders of, and applicants for, a fuel cycle facility license or construction permit subject to 10 CFR Part 70, Subpart H, "Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material."

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this letter for two purposes:

- (1) to request addressees to submit information to demonstrate compliance with regulatory requirements and applicable license conditions regarding the treatment of natural phenomena events in the facilities' integrated safety analysis (ISA)
- (2) to determine if additional NRC regulatory action is necessary to ensure that licensees comply with their licensing basis and existing NRC regulations

The NRC's regulations at 10 CFR 40.31(b) and 10 CFR 70.22(d) require addressees to submit a written response to this generic letter (GL) and, if necessary, take appropriate action in accordance with 10 CFR 70.62(a)(1) to demonstrate compliance with the performance requirements of 10 CFR 70.61. This GL requires no other action.

BACKGROUND

On March 11, 2011, the Tohoku–Taiheiyō–Oki earthquake occurred near the east coast of Honshu, Japan. This magnitude 9.0 earthquake and the subsequent tsunami caused significant damage to at least four of the six units of the Fukushima Dai-ichi nuclear power station. As a result, there was a loss of offsite and onsite electrical power systems.

On March 23, 2011, the NRC Chairman issued Tasking Memorandum COMGBJ-11-0002, "NRC Actions Following the Events in Japan" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110820875). In it, the Chairman directed the NRC's Executive Director for Operations to establish the NRC Near-Term Task Force (NTTF) to evaluate available technical and operational information from the events in Japan following the March 11, 2011, earthquake and tsunami at the Fukushima Dai-ichi nuclear power station. The

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NTTF was tasked to consider lessons learned from the event and to develop recommendations to improve the regulatory framework for reactors in the United States and their applicability to NRC-licensed facilities other than power reactors.

On March 31, 2011, the NRC staff issued Information Notice (IN) 2011-08, "Tohoku-Taiheiyou-Oki Earthquake Effects on Japanese Nuclear Power Plants—for Fuel Cycle Facilities" (ADAMS Accession No. ML110830824), to inform addressees of the potential challenges associated with preventing or mitigating the effects of natural phenomena events. IN 2011-08 recommended that addressees review the information for applicability to their facilities and consider actions, as appropriate, to ensure that features and preparations necessary to withstand or respond to severe external events from natural phenomena (e.g., earthquakes, tsunamis, floods, tornadoes, and hurricanes) are reasonable and consistent with regulatory requirements.

On July 12, 2011, in light of the accident at the Fukushima Dai-ichi Nuclear Power Plant, the NTTF, after conducting a systematic and methodical review of NRC processes and regulations, presented a set of recommendations to nuclear power reactors in the United States (ADAMS Accession No. ML111861807). The NTTF recommendations are intended to clarify and strengthen the regulatory framework for protection against natural disasters and improve mitigation and emergency preparedness at nuclear power reactors in the United States.

The NRC staff performed a systematic evaluation and inspection of selected fuel cycle facilities, in light of the lessons learned from the accident at the Fukushima Dai-ichi Nuclear Power Plant, to confirm that licensees were in compliance with applicable regulatory requirements and license conditions; and to evaluate their readiness to address natural phenomena hazards (NPH) events and other licensing bases events related to NPH. The staff's assessment considered the NTTF recommendations to determine whether additional regulatory actions by the NRC are warranted. This assessment included consideration of new seismic hazard information from the U.S. Geological Survey (USGS) for the central and eastern United States, which was the subject of an NRC generic communication to fuel facilities in IN 2010-19, "Updated Probabilistic Seismic Hazard Estimates in Central Eastern United States" (ADAMS Accession No. ML102160735).

Regulatory Framework for Fuel Facilities and Treatment of Natural Phenomena Hazards

For facilities regulated under 10 CFR Part 70, Subpart H, the NRC staff reviewed information to verify that the licensees were in compliance with applicable license conditions and the regulations contained in 10 CFR Part 70, Subpart H. Specifically, the NRC staff review looked at licensee compliance with the regulations in 10 CFR 70.62(c)(1), which requires, in part, that each licensee shall conduct and maintain an ISA that is of appropriate detail for the complexity of the process that identifies, among other things, "potential accident sequences caused by process deviations or other events internal to the facility and credible external events, including natural phenomena." The regulations in 10 CFR 70.62(c)(1) also require, in part, identification of the consequence and the likelihood of occurrence of each potential accident sequence, and the methods used to determine the consequences and likelihoods. The ISA is one of three elements of a safety program established and maintained by a licensee to demonstrate compliance with the performance requirements of 10 CFR 70.61. In addition, 10 CFR 70.22(i) provides criteria for the fuel facility emergency planning.

For new facilities or new processes at existing facilities, 10 CFR 70.64(a), "Baseline design criteria" requires, in part, that the design must provide for adequate protection against natural phenomena with consideration of the most severe documented historical events for the site.

The NRC staff reviewed the ISA summaries that licensees submitted to the NRC with their license application or license amendment requests. The ISA summaries provide a synopsis of the results of the ISA and licensees retain ~~them~~ the ISA and supporting documentation onsite. The majority of licensees of existing fuel cycle facilities completed their ISA after Subpart H of 10 CFR Part 70 was promulgated¹ in September 2000. The ISA, in general, postulated that structures, systems and components (SSCs) would remain intact during credible seismic events and, in some cases, concluded that a high radiological or chemical consequence was highly unlikely based on the assumption that the SSCs will adequately perform their safety functions during the NPH event. ~~The~~ Beginning in December 2011, the staff conducted inspections of the ISAs on a sample basis in accordance with inspection program expectations to verify compliance with the new requirements in 10 CFR Part 70, Subpart H. Prior to ~~the recent~~ these NRC inspections (further explanation in the next section), the NRC had not conducted systematic inspections of the ISAs with respect to NPH.

For facilities regulated under 10 CFR Part 40, "Domestic Licensing of Source Material," the NRC staff reviewed information to verify that the licensees were in compliance with applicable license conditions and the regulations in 10 CFR 40.31(j)(1)(ii), which requires, in part, an emergency plan for responding to the radiological hazards of an accidental release of source material and to any associated chemical hazards directly incident thereto, and to 10 CFR 40.31(j)(3)(ii), which requires identification of each type of accident sequence for which protective actions may be needed. The Honeywell Metropolis Works Facility and International Isotopes Fluorine Products Inc. completed ISAs, using methodologies, performance criteria, and staff guidance similar to 10 CFR Part 70 to evaluate relevant hazards and their associated accident sequences. The Honeywell and International Isotopes ISAs are captured in their licensing bases.

Inspection Results

From December 2011 through May 2012, the NRC staff conducted inspection activities in accordance with Temporary Instruction (TI) 2600/015, "Evaluation of Licensee Strategies for the Prevention and/or Mitigation of Emergencies at Fuel Facilities" (ADAMS Accession No. ML12286A284). The NRC completed the temporary instruction in three phases. In the initial phase, the staff reviewed licensing documents, including the integrated safety assessments and emergency plans. The second phase consisted of NRC inspectors evaluating licensee accident prevention measures and emergency actions through onsite evaluations that focused on credible natural phenomena events and loss of utilities that support onsite systems (e.g., electricity and water). The third phase involved assessing whether a licensee's strategies and equipment were effective to prevent and/or mitigate emergencies during selected beyond-licensing-basis natural phenomena events and extended loss-of-power and loss-of-offsite-water scenarios. In the review of licensing basis events, the NRC considered the following NPH: seismic, flooding, and high winds (caused by hurricanes or tornadoes). The

¹ Refer to 10 CFR 70.62(c)(3) which requires, in part, that existing licensees submit for NRC approval, by April 2001, a plan that describes the ISA approach; and by October 2004, or in accordance with the approved plan, a completed ISA. It also requires licensees to identify performance deficiencies and to correct them with adequate compensatory measures.

NRC staff also evaluated onsite fires because seismic events may cause failure of plant equipment that leads to facility fires. The NRC staff gave particular attention to earthquakes and flooding because of recent events, such as the accident at the Fukushima Dai-ichi Nuclear Power Plant, and because of significant advancements in the state of knowledge of these hazards.

Based on NRC staff inspections of existing fuel cycle facilities using TI 2600/015, the NRC determined that the evaluated facilities had established programs, procedures, and equipment to respond to licensing basis events involving fire, flooding, and loss of utilities. However, the NRC staff was not able to fully assess the capabilities of those facilities to adequately mitigate the consequences of credible natural phenomena events. Based on information obtained from the inspection activities, the NRC staff identified that licensees have not clearly documented the assumptions they used to develop their ISAs and other safety assessments. The NRC primarily attributed this to the lack of available facility design information and significant variations in the level of detail and rigor of implementation in the facility safety assessments with regards to the treatment of natural phenomena events. Therefore, the NRC inspectors were unable to verify that these facilities were in compliance with their licensing basis and regulatory requirements. The NRC staff could not confirm that the evaluated licensees had fully considered all credible external events (accident sequences) involving process deviations or other events internal to the facility (e.g., consequential explosions, spills, and fires resulting from the natural phenomena event). These accident sequences could potentially result in radiological/chemical consequences to workers, the public, or the environment.

For example, many operating fuel cycle facilities regulated under 10 CFR Part 70 that are located in the central and eastern United States were built between 1950 and 1990. These facilities were built following building codes with limited seismic design considerations, or building codes that have since been updated with more stringent seismic and other natural phenomena requirements. In addition, at the time when many licensees completed the safety assessments for the facilities to comply with the requirements of 10 CFR Part 70, Subpart H, seismic design provisions had undergone profound changes that were incorporated in building codes in areas of seismic hazard, seismic design detailing requirements, and performance of structures.

Under TI 2600/15, NRC inspectors found, in a number of facilities, insufficient supporting documentation to justify the assumption that the SSCs will adequately perform under a postulated NPH event. The lack of supporting documentation raises questions about the validity of the licensee's assumptions for the performance of the SSCs. The NRC inspectors opened unresolved items² (URIs) to further assess whether the evaluated licensees are in compliance with license conditions, the requirements of 10 CFR 70.61, and the requirements of 10 CFR 70.62(c), regarding NPH accident sequences. Nevertheless, the staff believes at this time, that for all the facilities inspected, due to consideration of inherent seismic capacity in SSCs, radiological/chemical source terms and existing safety programs in place (i.e., items relied on for safety), the facilities are adequate to protect public health and safety.

² An unresolved item involves an issue that requires more information to determine whether a violation has occurred. The NRC dispositions all potential violations according to the NRC Enforcement Policy (ADAMS Accession No. ML13228A199), which includes noncited violations, violations, the use of enforcement discretion, etc.

DISCUSSION

As a result of the inspections, the staff is issuing this generic communication due to the generic applicability of the URIs across the nuclear fuel facility industry. The NRC will use the information requested to evaluate licensees' compliance with NRC rules and regulations or relevant license conditions. Current NRC regulations require the evaluation of site hazards including natural phenomena events. However, knowledge of seismic design has evolved over time as new information regarding site hazards and expected structural performance (ductility concepts) ~~have~~~~has~~ become available. As a result, the licensing basis, design, and level of protection may differ among the existing operating fuel cycle facilities, depending on when the facility was constructed and what assumptions were used in the facilities' ISAs developed to comply with the new 10 CFR Part 70, Subpart H requirements. To date, the NRC has not undertaken a comprehensive evaluation of the licensing basis for existing fuel cycle facilities as it relates to natural phenomena events.

In an effort to fully assess the capabilities of fuel cycle facilities to prevent or mitigate the consequences of natural phenomena events, the staff is requesting information from the addressees to support a determination with regards to the proper evaluation of NPH impacts at the fuel cycle facilities. If not properly evaluated, severe natural phenomena may lead to a progression of events, such as fires, explosions, and chemical releases, that could lead to accidents not previously considered in the facilities' assessment and for which prevention or mitigation measures may be needed. Failure to protect SSCs relied on for safety from natural phenomena with appropriate safety margins has the potential to result in common-cause failures that could lead to accidents that exceed the performance requirements of 10 CFR 70.61. In addition, consistent with the Commission's goals as reflected in the NRC Strategic Plan (NUREG-1614), accidents that lead to inadvertent criticality or uncontrolled releases of licensed material to the environment are to be avoided. Therefore, the prevention and mitigation of such accidents, while ensuring that emergency preparedness is considered, are vital aspects that need further NRC review.

As described above, the license application and ISAs should consider natural phenomena events (e.g., tornadoes, hurricanes, and earthquakes) and other external events with a sufficient level of detail to characterize and assess the impacts from natural phenomena events and other external events on facility safety. The assessment should identify the licensing assumptions and the design bases for the structures and equipment credited for prevention or mitigation of the consequences to the facility from natural phenomena events and other external events. The assessment should indicate which events are considered not credible and the basis for that determination. It should also indicate which types of events could occur without adversely impacting safety. In addition, compliance with the regulatory requirements to prevent or mitigate the consequences of NPH events may require that facilities be prepared, or possess equipment, that limits the consequences affecting public health and worker radiological and chemical safety in the context of multiple challenges and degraded or disabled emergency resources. The degradations could include long-term loss of functions, such as offsite power, onsite emergency power, offsite water supply, other offsite services, and transportation to access offsite resources.

As the state of knowledge of NPH has evolved significantly since the licensing of many fuel cycle facilities, and given the demonstrated experiences from the Fukushima Dai-ichi nuclear power station accident and separately, updated seismic hazards information from the USGS for the central and eastern United States, it is necessary to confirm the appropriateness of the

magnitude and likelihood of hazards assumed for fuel cycle facilities and the licensees' ability to protect against those hazards. Fuel cycle facilities safety programs have been, and should continue to be, an evolving safety program supported by new scientific information, technologies, and methods for evaluation. As new information and analytical techniques are developed, safety standards need to be reviewed, evaluated, and changed, as necessary, to ensure that they continue to address the NRC's requirements to provide reasonable assurance of adequate protection of public health and safety.

In developing this GL, the staff had multiple interactions with stakeholders to discuss the basis for issuance of a generic communication. On August 21, 2012, the NRC staff held a public meeting with the Nuclear Energy Industry (NEI) and industry to discuss industry-proposed actions to address these URIs. By letter dated October 12, 2012, "Treatment of NPH in the Integrated Safety Analysis" (ADAMS Accession No. ML12296A036), NEI provided the background and industry's basis for the fuel facilities' current analyses of NPH in their ISAs. The NRC staff considered the information in NEI's letter during the development of this GL.

On April 11, 2013, the NRC staff held a Category 2 public meeting with the industry in Atlanta, Georgia, to discuss the status of several regulatory initiatives involving the fuel cycle industry, including the URIs regarding the treatment of hazards from natural phenomena events. The meeting summary can be found under ADAMS Accession No. ML13113A251. On June 11, 2013, during the NRC's Fuel Cycle Information Exchange, the staff discussed the status of the initiatives for the evaluation of lessons from the Fukushima Dai-ichi accident at fuel cycle facilities. The staff presentation (ADAMS Accession No. ML13168A057) was part of a panel discussion on post-Fukushima issues that included stakeholders direct interaction with staff on topics related to the treatment of NPH.

This GL was published as a draft for public comment in the *Federal Register* on August 8, 2014 (79 FR 46472). Additional details regarding the comments received and the NRC staff's responses to comments are provided later in this GL under "*FEDERAL REGISTER NOTIFICATION.*"

APPLICABLE REGULATORY REQUIREMENTS

- 10 CFR 40.31(j)(1)(ii)
- 10 CFR 40.31(j)(3)(ii), "Types of accidents"
- 10 CFR 70.22(i)
- 10 CFR 70.22(f)
- 10 CFR 70.61(a)-(e)
- 10 CFR 70.62(c), "Integrated safety analysis"
- 10 CFR 70.64(a)(2), "Natural phenomena hazards"
- 10 CFR 70.65(b)

The staff provides additional guidance on the regulatory acceptance criteria for the review of a license application and ISA in NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," and NUREG-1513, "Integrated Safety Analysis Guidance Document."

Appendix D to Chapter 3 of NUREG-1520 provides additional guidance for addressing accident sequences that may result from NPH in the context of a license application and ISA.

REQUESTED ACTIONS

The NRC requests that all addressees take the following actions:

(1) Within 90 days of the date of this letter, all addressees are requested to:

- a. Submit the definitions of "unlikely," "highly unlikely," and "credible" in evaluating natural phenomena events in the ISA such as earthquakes, tornadoes, tornado missile impacts, floods, hurricanes, and other wind storms.
- b. Submit a description of the licensee's safety assessment for the licensing and design basis natural phenomena events, including the following information:
 - i. likelihood and severity of the natural phenomena events, such as earthquakes, tornadoes, floods, hurricanes, and other wind storms
 - ii. accident sequences as a result of natural phenomena event impacts to facility structures and internal components
 - iii. assessment of the consequences for the accident sequences from item ii that result in intermediate and/or high consequence events
 - iv. items relied on for safety to prevent or mitigate the consequences of the events from items ii and iii
- c. For facilities subject to 10 CFR Part 70, Subpart H requirements, submit a description of the results of the ISA review used to comply with 10 CFR 70.62(c), identifying the characteristics of the licensing and design basis natural phenomena events applicable to the site, that evaluates possible changes in the methodology, likelihood, and severity of natural phenomena events with those used in the original design/evaluation of the facility.
- d. Submit for staff review a summary of the results of any facility assessments or walk downs, if performed, to identify and address degraded, nonconforming, or unanalyzed conditions that can affect the performance of the facility under natural phenomena and have available for NRC inspection the documentation of the qualifications of the team.

Note: Licensees or facilities subject to 10 CFR 70.64(a)(2) may reference sections of their license application and/or ISA summaries as a response to applicable requested actions.

~~(2) If an addressee identifies that a change in the facility safety assessment for NPH is needed, the NRC requests that the addressee submit a plan for NRC staff review, pursuant to 10 CFR 70.22(d) and 10 CFR 40.31, within 180 days of the date of this letter that considers the following, as required by 10 CFR 70.62(a)(1) or license conditions:~~

- ~~a. The evaluation basis for NPH events.~~

- ~~b. A review of safety margins to determine inherent conservatism in the design or as-built condition of the facility, as well as accident progression, to verify if the current state or design of the facility can compensate for the increased hazard.~~
- ~~c. SSCs or items relied on for safety to protect workers and the public from intermediate and high consequence events.~~
- ~~d. Description of administrative provisions, including maintenance, periodic testing and inspection program, and emergency procedures and preparedness, to prevent and mitigate the consequences of natural phenomena events.~~
- ~~e. Proposed modifications to the facility SSCs and a schedule with an estimate of completion of the proposed modifications.~~

REQUIRED RESPONSE

In accordance with 10 CFR 40.31(b) and 10 CFR 70.22(d) the Commission may require further statements to determine if the agency should modify or revoke a facility license or take other action. Therefore, the NRC requires addressees to respond as described below.

Within 90 days of the date of this GL, the NRC requires each addressee to submit a written response consistent with the requested actions and information. If an addressee cannot meet the requested response date, the addressee shall provide a response within 30 days of the date of this GL. In either case, each addressee must address in its response any alternative course of action that it proposes to take, including the basis for the acceptability of the proposed alternative course of action and estimated completion dates.

Addressees must submit the required written response, signed under oath or affirmation, to the NRC, ATTN: Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, in accordance with 10 CFR 70.5, "Communications." In addition, addressees must submit a copy of the response to the Region II Regional Administrator.

REASONS FOR INFORMATION REQUEST

The NRC is requesting this information because after a review of operating fuel cycle facilities documentation and inspections, the NRC staff was unable to validate that the facilities were in compliance with their licensing basis for NPH. The inspections found that many operating fuel cycle facilities lacked facility design information, that there were significant variations in the level of detail and rigor in the facility ISAs, that the assumptions used in developing the safety analysis were not clearly described, and that some supporting analyses were limited or missing.

BACKFIT DISCUSSION

This GL is addressed to applicants for and holders of specific source licenses issued under 10 CFR Part 40, and applicants for and holders of special nuclear materials licenses for fuel cycle facilities under 10 CFR Part 70.

Applicants and licensees under Part 40 are not protected by any backfitting provisions. Therefore, no further consideration of backfitting is needed with respect to Part 40 applicants

and licensees.

Applicants and licensees under Part 70 are protected by the backfitting provision in 10 CFR 70.76, "Backfitting." However, this GL would not constitute backfitting under 10 CFR 70.76. First, because this GL only asks addressees to provide information regarding their facilities' compliance with the existing applicable regulatory requirements as discussed in this GL. Information collection and reporting requirements are not subject to the purview of the Backfit Rule.

~~Second, the information requested in this GL concerns the content of ISAs and the supporting documentation for the ISAs with respect to NPH. NPHs were not a licensing requirement at the time of initial licensing, and, therefore, were not reviewed by the NRC at that time. The NRC required consideration of NPH as part of the September 2000 rulemaking (65 FR 56211; September 18, 2000) adding Subpart H—which required the development of an ISA and the submission and NRC approval of an ISA summary. See 10 CFR 70.66. The NRC's review and approval of the ISA summaries did not involve a comprehensive review of the underlying ISAs, including the adequacy of either the ISAs' consideration of NPH or the supporting documentation. Nor had the NRC staff conducted any prior methodological inspections of the implementation of the ISA approaches with respect to NPH. Therefore, even if the NRC were to require the Part 70 licensees who are subject to this GL to make changes to their facility based upon inadequate information in the ISA itself or supporting documentation, this would not be considered backfitting. This is because the NRC did not provide any prior approval or position with respect to the ISA and supporting documentation with respect to NPH (except to the extent that ISA information was directly expressed in the ISA summary).~~

Third, fuel cycle facility licensees are required to "maintain," *inter alia*, ISAs and ISA summaries under 10 CFR 70.62. Any errors, omissions or failures to properly address applicable NRC requirements in ISA summaries, the underlying ISAs, and information necessary to support the ISA (required to be developed and maintained by various provisions in Part 70), must be addressed and reflected in the updated ISAs and ISA summaries required by 10 CFR 70.62. Therefore, such information developed to address any fuel cycle licensee's omissions or errors in documenting compliance with applicable NRC requirements on natural hazards, which is the subject of this GL, is a pre-existing regulatory obligation of the licensees. Any activities which a fuel cycle facility licensee must undertake to comply with 10 CFR 70.62 ~~is-~~ do not constitute backfitting.

~~Assuming as a result of information submitted by licensees in response to this GL, the NRC takes regulatory action (based on the existing interpretation of the regulation) requiring licensees to modify either their ISA summaries, underlying ISAs, or to modify their facilities to comply with their approved ISA summaries with respect to NPH, and if these modifications are considered to be backfitting, then the NRC believes such action would be necessary to ensure compliance with licensees' previously approved ISA summaries and/or the performance requirements of 10 CFR 70.61. As such, these NRC actions would fall under the "compliance exceptions" in 10 CFR 70.76(a)(4)(i) and/or (ii), which excepts the NRC from preparing a backfit analysis to support a backfitting action needed for compliance.~~

~~The NRC believes that the compliance exception may be properly invoked, because the NRC's action (and any modification of an ISA summary, ISA or the facility itself) would not be based on: (i) a new or different NRC position on the criteria or acceptance standards with respect to consideration of NPH; or (ii) a new or different interpretation of the applicable NRC regulations.~~

~~in 10 CFR Part 70, Subpart H with respect to consideration of NPH.~~

FEDERAL REGISTER NOTIFICATION

A notice of opportunity for public comment on this GL was published in the *Federal Register* on August 8, 2014 (79 FR 46472). Comments were received from Stephen McDuffie (ADAMS Accession No. ML14281A266) and the Nuclear Energy Institute (ADAMS Accession No. ML14316A411). The NRC staff considered all comments that were received. The NRC staff's evaluation of the comments is publicly available through the NRC's ADAMS Accession No. ML14328A036.

CONGRESSIONAL REVIEW ACT

This GL is not a rule as defined in the Congressional Review Act (5 U.S.C. §§ 801-808).

PAPERWORK REDUCTION ACT STATEMENT

This GL contains information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved by the Office of Management and Budget, approval number 3150-XXXX.

The burden to the public for these mandatory information collections is estimated to average 56 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of these information collections, including suggestions for reducing the burden, to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to INFOCOLLECTS.RESOURCE@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-XXXX), Office of Management and Budget, Washington, DC 20503.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

CONTACT

Please direct any questions about this matter to the technical contact listed below, or to the appropriate Office of Nuclear Material Safety and Safeguards project manager.

Marissa G. Bailey, Director
Division of Fuel Cycle Safety, Safeguards,
and Environmental Review
Office of Nuclear Material Safety
and Safeguards

Technical Contact: Jonathan Marciano, NMSS
301-287-9063
e-mail: Jonathan.Marciano@nrc.gov

CONTACT

Please direct any questions about this matter to the technical contact listed below, or to the appropriate Office of Nuclear Material Safety and Safeguards project manager.

Marissa G. Bailey, Director
Division of Fuel Cycle Safety, Safeguards,
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*via email

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NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

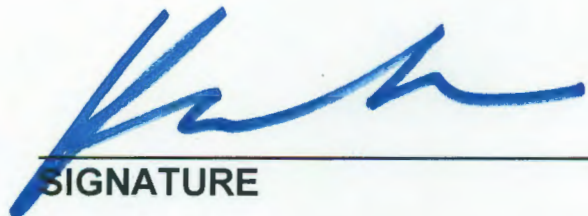
FROM: COMMISSIONER SVINICKI

SUBJECT: SECY-15-0045: ISSUANCE OF GENERIC LETTER
2015-01, "TREATMENT OF NATURAL PHENOMENA
HAZARDS IN FUEL CYCLE FACILITIES"

Approved XX in part Disapproved XX in part Abstain _____

Not Participating _____

COMMENTS: Below _____ Attached X None _____



SIGNATURE

05/22/15

DATE

Entered in STARS"

Yes



No

**Commissioner Svinicki's Comments on SECY-15-0045
Issuance of Generic Letter 2015-01,
"Treatment of Natural Phenomena Hazards in Fuel Cycle Facilities"**

I disapprove issuance of the draft Generic Letter (Enclosure to SECY-15-0045). I approve, instead, a set of actions to be taken consistent with standing Commission direction and policy in this area. These actions would not absolutely preclude the issuance of a more narrowly scoped and properly justified generic letter in the future. A future generic letter should only be pursued after the staff has carried out actions to establish and define more clearly the level of detail of licensee documentation needed to support continued findings of reasonable assurance of adequate protection. Consistent with standing Commission direction (and as was not the case here), "[r]egarding the applicability of post-Fukushima measures to fuel cycle facilities, the staff should pursue the timely completion of the ongoing inspection activities [and a]ny proposed changes in licensing basis for any facility should be provided in a notation vote paper to the Commission." [See SRM SECY-12-0025]

The generic letter as drafted embarks upon the initial stages of what is essentially a design basis reconstitution effort for U.S. fuel cycle facilities. Such a significant undertaking constitutes a matter for Commission review and approval and requires much greater substantiation and justification than is found here, in the Information Paper that I requested be converted into a voting matter. For example, the Commission's Policy Statement on the Availability and Adequacy of Design Bases Information at Nuclear Power Plants requires that, "in the event that design bases information is found technically inadequate or not accessible," any actions taken should consider whether remedial action is warranted "commensurate with the safety significance of the missing or erroneous information." This policy statement has many features that bear on the draft generic letter and yet the staff has provided no such evaluation of risk significance and, as a matter of fact, acknowledges within the draft generic letter itself that "[n]evertheless, that staff believes at this time, that for all the facilities inspected, due to consideration of inherent seismic capacity in [systems, structures, and components] SSCs, radiological/chemical source terms and existing safety programs in place (i.e., items relied on for safety), *the facilities are adequate to protect public health and safety.*" (emphasis added)

Moreover, issuance of the generic letter is inconsistent with standing Commission policy, which, as noted above, directed that the natural hazards phenomena for fuel cycle facilities arising post-Fukushima be addressed through the inspection program. The Commission adopted this approach in light of what the staff acknowledges within the draft generic letter itself; namely, "the licensing basis, design, and level of protection may differ among the existing operating fuel cycle facilities." It is not only true that they "may" differ; in point of fact, they "do" differ. The operative question is whether the facilities, as operated, provide for reasonable assurance of adequate protection. The staff appears to conclude that they do provide such assurance but then abandons the approach directed by the Commission (i.e., continuing to resolve the open unresolved items resulting from the inspection activities already carried out) and pivots towards this design basis reconstitution effort, without basis or explanation.

It should be noted that Inspection Manual Chapter 2600, "Fuel Cycle Facility Operation Safety and Safeguards Inspection Program," addresses unresolved items as follows:

An Unresolved Item (URI) involves an issue that requires more information to determine whether a violation has occurred. Because each URI is a potential safety issue, every effort must be made to obtain the required information. As such, the inspector should identify what information is required to close the URI to the licensee at the exit meeting

and a schedule for obtaining that information should be obtained. Additionally, the inspector should obtain the licensee's rationale for why the process is safe prior to leaving the site (e.g., a compensatory measure is in place, the equipment is shut down, etc.).

The staff should get on with the process of resolving these URIs. Three years is a relatively long period for these URIs to have remained open, which seems contrary to the Principles of Good Regulation and is certainly inconsistent with orderly due process. This defect is compounded by the existence of the staff's conclusion that there is no potential safety issue that impugns the finding of reasonable assurance of adequate protection, further begging the questions of why the URIs remain unresolved, why we are not focusing agency efforts on closing them through the inspection/oversight process (as the Commission directed), and why it is justified and more efficient to embark on this large-scale design reconstitution, instead.

Ironically, in its notation vote paper on the topic of Cumulative Effect of Regulation (SECY-15-0050), the staff used the development of this draft generic letter as an example of the application of CER in generic communications (see Enclosure 4 of that paper). The staff summarizes the outcome of its outreach effort by stating that the industry response did not identify any significant effect on a licensee's ability to carry out other significant NRC regulatory requirements or respond to the generic letter. In stark contrast, however, an actual reading of the industry response, dated November 6, 2014, reveals feedback that "requiring a licensee to replicate and consolidate [information] . . . and, in the absence of an identified safety issue, submit [information] in a different format simply [to repackage it] for a different regulatory purpose appears to be a poor use of limited industry and NRC resources." Further, in response to an NRC-posed question of whether the generic letter would adversely affect other efforts with greater safety benefit, the industry responded that it would and provided eight examples of how.

It should also be noted that the draft generic letter fails to offer parallel treatment as was given to all power reactor licensees [see letters to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, from E. Leeds, Director, Office of Nuclear Reactor Regulation, dated March 1, 2013 and February 20, 2014]. These letters stipulated the following regarding natural hazard reevaluations:

The staff considers the flood hazard reevaluations being performed pursuant to the 50.54(f) letter to be beyond the current design/licensing basis of operating plants. Consequently, the results of the analysis performed using present-day regulatory guidance, methodologies, and information would not generally be expected to call into question the operability or functionality of SSCs.

and


The staff considers the seismic hazard reevaluations being performed pursuant to the 50.54(f) letter to be distinct from the current design or licensing basis of operating plants. Consequently, the results of the analysis performed using present-day regulatory guidance, methodologies, and information would not generally be expected to call into question the operability or functionality of SSCs.

At bottom, I find much chaos and little order in this approach to resolution of a narrow set of already-identified, unresolved items, existing at fuel cycle facilities that NRC repeatedly acknowledges do not present a homogeneous or easily categorized set of hazards, and thus, where generic approaches to issue resolution are generally not efficient. The draft letter

mishandles backfit policy by embracing escalating safety standards while defining this approach as one of "compliance", thereby obviating the need for backfit analysis. It also misstates agency policy by claiming an agency goal that "accidents that lead to inadvertent criticality or uncontrolled releases of licensed material to the environment are to be *avoided*," when the NRC Strategic Plan adopts the goal of "*minimizing* the likelihood of accidents and *reducing* the consequences of an accident (should one occur)."

In summary, the document is carelessly crafted, does not conform to our regulatory process, departs from standing Commission direction regarding resolution of these issues, and therefore should not be issued. Instead, consistent with existing Commission direction, the staff should do the following.

- (1) Resume resolution of the unresolved items and complete resolution in an expeditious manner.
- (2) In resolving these issues, the staff should not call into question the operability or functionality of systems, structures, and components, and items relied on for safety, absent prima facie evidence of inoperability.
- (3) Provide to the Commission a notation vote paper containing any proposed changes in any fuel cycle facility's licensing basis.



Kristine L. Svinicki

22 May 2015

Commissioner Ostendorff's Comments on SECY-15-0045, Issuance of Generic Letter 2015-01, "Treatment of Natural Phenomena Hazards in Fuel Cycle Facilities"

I appreciate Commissioner Svinicki converting this information paper to a notation vote paper for the Commission.

I have significant concerns with the generic letter provided to the Commission as discussed below. The promulgation of 10 CFR Part 70, Subpart H on September 18, 2000, took great strides regarding assessment of natural phenomena hazards at fuel cycle facilities by requiring licensees to develop integrated safety analyses (ISAs) to, among other things, assess accident sequences caused by credible external events, including natural phenomena. Licensees were required to submit ISA summaries, which the staff reviewed and approved. More recently, in response to the March, 11, 2011, Tohoku-Taiheiyou-Oki earthquake, the staff inspected selected fuel cycle facilities under Temporary Instruction 2600/015, "Evaluations of Licensee Strategies for the Prevention and/or Mitigation of Emergencies at Fuel Facilities," and concluded that the facilities inspected provide adequate protection of public health and safety because of inherent seismic capacity, source term considerations, and existing safety programs in place.

During some inspections, NRC inspectors found insufficient supporting documentation to justify the assumption that structures, systems, and components would adequately perform under postulated natural phenomena hazard events. In response, NRC inspectors opened unresolved items to further assess licensees' compliance with their licenses and applicable regulations. As these unresolved items had some common themes, and because industry has generally indicated a desire for the NRC to handle potentially generic issues through an appropriate generic process, the staff developed Generic Letter 2015-01, "Treatment of Natural Phenomenon Hazards in Fuel Cycle Facilities." The generic letter provides an appropriate mechanism to begin addressing these issues in a consistent and comprehensive manner and serves as the first step in what should be treated as a two-step process. Thus, I approve issuance of the generic letter to collect the information requested in item one.

I do not approve including the second step of the process in this generic letter, however, and so I disapprove requesting the information contained in item two. I agree with Commissioner Svinicki's vote that the draft generic letter mishandles backfit policy by embracing escalating safety standards while defining this approach as one of "compliance," thereby obviating the need for backfit analysis requirements in 10 CFR 70.76. The generic letter makes the case that the requirement for licensees to "maintain" their integrated safety analyses equates to a "living licensing basis." I strongly disagree with this interpretation. To be sure, if clear errors, omissions, or failures to properly assess NRC requirements exist in ISAs, ISA summaries, or supporting documentation, I support addressing those issues through the inspection and enforcement process. But, for issues where methodologies have changed or new information on external hazards has come to light since the time that the original ISA summaries were reviewed and approved, it is more appropriate to adopt an approach similar to what we have done for the power reactors. That is, first collect relevant information and analyses from licensees and then evaluate whether "modifications or additions to systems, structures or components of a facility or to the procedures of an organization required to operate a facility" are warranted by developing a "systematic and documented analysis pursuant to paragraph (b)" of 10 CFR 70.76. Consistent with standing Commission direction from SRM SECY-12-0025 regarding the applicability of post-Fukushima measures to fuel cycle facilities, any proposed changes to the licensing basis should be provided in a notation vote paper to the

Commission. Such a significant undertaking constitutes a matter for Commission review and approval and requires much greater substantiation and justification than is found here.

I view the proposed generic letter as the tool to conduct the first step to ensure compliance with existing licensing bases. If item two in the letter is truly aimed at compliance, it is unnecessary because when a noncompliance is identified, licensees must always follow their corrective action programs to remedy them. There is no need to create a new process here. Finally, the staff should more clearly identify the level of detail needed in licensees' documentation to justify the assumption that structures, systems, and components would adequately perform under postulated natural phenomena hazard events. One way to accomplish this is through the interim staff guidance that is being developed as a companion to the generic letter. Staff should appropriately revise the interim staff guidance to reflect the changes to the generic letter and should provide it to the Commission for information prior to issuing it in conjunction with the generic letter.

I have attached edits to the proposed generic letter to reflect my vote.

WCO edits

UNITED STATES
NUCLEAR REGULATORY COMMISSION OFFICE
OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, DC 20555-0001

NRC GENERIC LETTER 2015-01: TREATMENT OF NATURAL PHENOMENA HAZARDS
IN FUEL CYCLE FACILITIES

ADDRESSEES

All holders of and applicants for a specific source material license or construction permit for large quantities of uranium hexafluoride under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 40, "Domestic Licensing of Source Material."

All holders of, and applicants for, a fuel cycle facility license or construction permit subject to 10 CFR Part 70, Subpart H, "Additional Requirements for Certain Licensees Authorized to Possess a Critical Mass of Special Nuclear Material."

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this letter for two purposes:

- (1) to request addressees to submit information to demonstrate compliance with regulatory requirements and applicable license conditions regarding the treatment of natural phenomena events in the facilities' integrated safety analysis (ISA)
- (2) to determine if additional NRC regulatory action is necessary to ensure that licensees comply with their licensing basis and existing NRC regulations

The NRC's regulations at 10 CFR 40.31(b) and 10 CFR 70.22(d) require addressees to submit a written response to this generic letter (GL) and, if necessary, take appropriate action in accordance with 10 CFR 70.62(a)(1) to demonstrate compliance with the performance requirements of 10 CFR 70.61. This GL requires no other action.

BACKGROUND

On March 11, 2011, the Tohoku-Taiheiyou-Oki earthquake occurred near the east coast of Honshu, Japan. This magnitude 9.0 earthquake and the subsequent tsunami caused significant damage to at least four of the six units of the Fukushima Dai-ichi nuclear power station. As a result, there was a loss of offsite and onsite electrical power systems.

On March 23, 2011, the NRC Chairman issued Tasking Memorandum COMGBJ-11-0002, "NRC Actions Following the Events in Japan" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110820875). In it, the Chairman directed the NRC's Executive Director for Operations to establish the NRC Near-Term Task Force (NTTF) to evaluate available technical and operational information from the events in Japan following the March 11, 2011, earthquake and tsunami at the Fukushima Dai-ichi nuclear power station. The

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NTTF was tasked to consider lessons learned from the event and to develop recommendations to improve the regulatory framework for reactors in the United States and their applicability to NRC-licensed facilities other than power reactors.

On March 31, 2011, the NRC staff issued Information Notice (IN) 2011-08, "Tohoku-Taiheiyoku-Oki Earthquake Effects on Japanese Nuclear Power Plants—for Fuel Cycle Facilities" (ADAMS Accession No. ML110830824), to inform addressees of the potential challenges associated with preventing or mitigating the effects of natural phenomena events. IN 2011-08 recommended that addressees review the information for applicability to their facilities and consider actions, as appropriate, to ensure that features and preparations necessary to withstand or respond to severe external events from natural phenomena (e.g., earthquakes, tsunamis, floods, tornadoes, and hurricanes) are reasonable and consistent with regulatory requirements.

On July 12, 2011, in light of the accident at the Fukushima Dai-ichi Nuclear Power Plant, the NTTF, after conducting a systematic and methodical review of NRC processes and regulations, presented a set of recommendations to nuclear power reactors in the United States (ADAMS Accession No. ML111861807). The NTTF recommendations are intended to clarify and strengthen the regulatory framework for protection against natural disasters and improve mitigation and emergency preparedness at nuclear power reactors in the United States.

The NRC staff performed a systematic evaluation and inspection of selected fuel cycle facilities, in light of the lessons learned from the accident at the Fukushima Dai-ichi Nuclear Power Plant, to confirm that licensees were in compliance with applicable regulatory requirements and license conditions; and to evaluate their readiness to address natural phenomena hazards (NPH) events and other licensing bases events related to NPH. The staff's assessment considered the NTTF recommendations to determine whether additional regulatory actions by the NRC are warranted. This assessment included consideration of new seismic hazard information from the U.S. Geological Survey (USGS) for the central and eastern United States, which was the subject of an NRC generic communication to fuel facilities in IN 2010-19, "Updated Probabilistic Seismic Hazard Estimates in Central Eastern United States" (ADAMS Accession No. ML102160735).

Regulatory Framework for Fuel Facilities and Treatment of Natural Phenomena Hazards

For facilities regulated under 10 CFR Part 70, Subpart H, the NRC staff reviewed information to verify that the licensees were in compliance with applicable license conditions and the regulations contained in 10 CFR Part 70, Subpart H. Specifically, the NRC staff review looked at licensee compliance with the regulations in 10 CFR 70.62(c)(1), which requires, in part, that each licensee shall conduct and maintain an ISA that is of appropriate detail for the complexity of the process that identifies, among other things, "potential accident sequences caused by process deviations or other events internal to the facility and credible external events, including natural phenomena." The regulations in 10 CFR 70.62(c)(1) also require, in part, identification of the consequence and the likelihood of occurrence of each potential accident sequence, and the methods used to determine the consequences and likelihoods. The ISA is one of three elements of a safety program established and maintained by a licensee to demonstrate compliance with the performance requirements of 10 CFR 70.61. In addition, 10 CFR 70.22(i) provides criteria for the fuel facility emergency planning.

For new facilities or new processes at existing facilities, 10 CFR 70.64(a), "Baseline design criteria" requires, in part, that the design must provide for adequate protection against natural phenomena with consideration of the most severe documented historical events for the site.

The NRC staff reviewed the ISA summaries that licensees submitted to the NRC with their license application or license amendment requests. The ISA summaries provide a synopsis of the results of the ISA and licensees retain ~~them~~ the ISA and supporting documentation onsite. The majority of licensees of existing fuel cycle facilities completed their ISA after Subpart H of 10 CFR Part 70 was promulgated¹ in September 2000. The ISA, in general, postulated that structures, systems and components (SSCs) would remain intact during credible seismic events and, in some cases, concluded that a high radiological or chemical consequence was highly unlikely based on the assumption that the SSCs will adequately perform their safety functions during the NPH event. Beginning in December 2011, ~~t~~The staff conducted inspections of the ISAs on a sample basis in accordance with inspection program expectations to verify compliance with the new requirements in 10 CFR Part 70, Subpart H. Prior to ~~the recent~~these NRC inspections (further explanation in the next section), the NRC had not conducted systematic inspections of the ISAs with respect to NPH.

For facilities regulated under 10 CFR Part 40, "Domestic Licensing of Source Material," the NRC staff reviewed information to verify that the licensees were in compliance with applicable license conditions and the regulations in 10 CFR 40.31(j)(1)(ii), which requires, in part, an emergency plan for responding to the radiological hazards of an accidental release of source material and to any associated chemical hazards directly incident thereto, and to 10 CFR 40.31(j)(3)(ii), which requires identification of each type of accident sequence for which protective actions may be needed. The Honeywell Metropolis Works Facility and International Isotopes Fluorine Products Inc. completed ISAs, using methodologies, performance criteria, and staff guidance similar to 10 CFR Part 70 to evaluate relevant hazards and their associated accident sequences. The Honeywell and International Isotopes ISAs are captured in their licensing bases.

Inspection Results

From December 2011 through May 2012, the NRC staff conducted inspection activities in accordance with Temporary Instruction (TI) 2600/015, "Evaluation of Licensee Strategies for the Prevention and/or Mitigation of Emergencies at Fuel Facilities" (ADAMS Accession No. ML12286A284). The NRC completed the temporary instruction in three phases. In the initial phase, the staff reviewed licensing documents that licensees had submitted to the NRC, including the integrated safety assessments and emergency plans. The second phase consisted of NRC inspectors evaluating licensee accident prevention measures and emergency actions through onsite evaluations that focused on credible natural phenomena events and loss of utilities that support onsite systems (e.g., electricity and water). The third phase involved assessing whether a licensee's strategies and equipment were effective to prevent and/or mitigate emergencies during selected beyond-licensing-basis natural phenomena events and extended loss-of-power and loss-of-offsite-water scenarios. In the review of licensing basis events, the NRC considered the following NPH: seismic, flooding, and high winds (caused by hurricanes or tornadoes). The NRC staff also evaluated onsite fires because seismic events may cause failure of plant equipment that leads to facility fires. The NRC staff gave particular attention to earthquakes and flooding because of recent events, such as the accident at the Fukushima Dai-ichi Nuclear Power Plant, and because of significant advancements in the state of knowledge of these hazards.

¹ Refer to 10 CFR 70.62(c)(3) which requires, in part, that existing licensees submit for NRC approval, by April 2001, a plan that describes the ISA approach; and by October 2004, or in accordance with the approved plan, a completed ISA. It also requires licensees to identify performance deficiencies and to correct them with adequate compensatory measures.

Based on NRC staff inspections of existing fuel cycle facilities using TI 2600/015, the NRC determined that the evaluated facilities had established programs, procedures, and equipment to respond to licensing basis events involving fire, flooding, and loss of utilities. However, the NRC staff was not able to fully assess the capabilities of those facilities to adequately mitigate the consequences of credible natural phenomena events, specifically, earthquakes and high wind. Based on information obtained from the inspection activities, the NRC staff identified that licensees have not clearly documented the assumptions they used to develop their ISAs and other safety assessments. The NRC primarily attributed this to the lack of available facility design information and significant variations in the level of detail and rigor of implementation in the facility safety assessments with regards to the treatment of natural phenomena events. Therefore, the NRC inspectors were unable to verify that these facilities were in compliance with their licensing basis and regulatory requirements. The NRC staff could not confirm that the evaluated licensees had fully considered all credible external events (accident sequences) involving process deviations or other events internal to the facility (e.g., consequential explosions, spills, and fires resulting from the natural phenomena event). These accident sequences could potentially result in radiological/chemical consequences to workers, the public, or the environment.

For example, many operating fuel cycle facilities regulated under 10 CFR Part 70 that are located in the central and eastern United States were built between 1950 and 1990. These facilities were built following building codes with limited seismic design considerations, or building codes that have since been updated with more stringent seismic and other natural phenomena requirements. In addition, at the time when many licensees completed the safety assessments for the facilities to comply with the requirements of 10 CFR Part 70, Subpart H, seismic design provisions had undergone profound changes that were incorporated in building codes in areas of seismic hazard, seismic design detailing requirements, and performance of structures.

Under TI 2600/15, NRC inspectors found, in a number of facilities, insufficient supporting documentation to justify the assumption that the SSCs will adequately perform under a postulated NPH event. The lack of supporting documentation raises questions about the validity of the licensee's assumptions for the performance of the SSCs. The NRC inspectors opened unresolved items² (URIs) to further assess whether the evaluated licensees are in compliance with license conditions, the requirements of 10 CFR 70.61, and the requirements of 10 CFR 70.62(c), regarding NPH accident sequences. Nevertheless, the staff believes at this time, that for all the facilities inspected, due to consideration of inherent seismic capacity in SSCs, radiological/chemical source terms and existing safety programs in place (i.e., items relied on for safety), the facilities are adequate to protect public health and safety.

² An unresolved item involves an issue that requires more information to determine whether a violation has occurred. The NRC disposes all potential violations according to the NRC Enforcement Policy (ADAMS Accession No. ML13228A199), which includes noncited violations, violations, the use of enforcement discretion, etc.

DISCUSSION

As a result of the inspections, the staff is issuing this generic communication due to the generic applicability of the URIs across the nuclear fuel facility industry. The NRC will use the information requested to evaluate licensees' compliance with NRC rules and regulations or relevant license conditions. Current NRC regulations require the evaluation of site hazards including natural phenomena events. However, knowledge of seismic design has evolved over time as new information regarding site hazards and expected structural performance (ductility concepts) has become available. As a result, the licensing basis, design, and level of protection may differ among the existing operating fuel cycle facilities, depending on when the facility was constructed and what assumptions were used in the facilities' ISAs developed to comply with the new 10 CFR Part 70, Subpart H requirements. To date, the NRC has not undertaken a comprehensive evaluation of the licensing basis for existing fuel cycle facilities as it relates to natural phenomena events.

In an effort to fully assess the capabilities of fuel cycle facilities to prevent or mitigate the consequences of natural phenomena events, the staff is requesting information from the addressees to support a determination with regards to the proper evaluation of NPH impacts at the fuel cycle facilities. If not properly evaluated, severe natural phenomena may lead to a progression of events, such as fires, explosions, and chemical releases, that could lead to accidents not previously considered in the facilities' assessment and for which prevention or mitigation measures may be needed. Failure to protect SSCs relied on for safety from natural phenomena with appropriate safety margins has the potential to result in common-cause failures that could lead to accidents that exceed the performance requirements of 10 CFR 70.61. In addition, consistent with the Commission's goals as reflected in the NRC Strategic Plan (NUREG-1614), accidents that lead to inadvertent criticality or uncontrolled releases of licensed material to the environment are to be avoided. Therefore, the prevention and mitigation of such accidents, while ensuring that emergency preparedness is considered, are vital aspects that need further NRC review.

As described above, the license applications and ISAs should consider natural phenomena events (e.g., tornadoes, hurricanes, and earthquakes) and other external events with a sufficient level of detail to characterize and assess the impacts from natural phenomena events and other external events on facility safety. The assessment should identify the licensing assumptions and the design bases for the structures and equipment credited for prevention or mitigation of the consequences to the facility from natural phenomena events and other external events. The assessment should indicate which events are considered not credible and the basis for that determination. It should also indicate which types of events could occur without adversely impacting safety. In addition, compliance with the regulatory requirements to prevent or mitigate the consequences of NPH events may require that facilities be prepared, or possess equipment, that limits the consequences affecting public health and worker radiological and chemical safety in the context of multiple challenges and degraded or disabled emergency resources. The degradations could include long-term loss of functions, such as offsite power, onsite emergency power, offsite water supply, other offsite services, and transportation to access offsite resources.

~~As the state of knowledge of NPH has evolved significantly since the licensing of many fuel cycle facilities, and given the demonstrated experiences from the Fukushima Dai-ichi nuclear power station accident and separately, updated seismic hazards information from the USGS for the central and eastern United States, it is necessary to confirm the appropriateness of the~~

~~magnitude and likelihood of hazards assumed for fuel cycle facilities and the licensees' ability to protect against those hazards. Fuel cycle facilities safety programs have been, and should continue to be, an evolving safety program supported by new scientific information, technologies, and methods for evaluation. As new information and analytical techniques are developed, safety standards need to be reviewed, evaluated, and changed, as necessary, to ensure that they continue to address the NRC's requirements to provide reasonable assurance of adequate protection of public health and safety.~~

Comment [BE1]: This seems to imply a living licensing basis. Commissioner Ostendorff does not support such an interpretation.

In developing this GL, the staff had multiple interactions with stakeholders to discuss the basis for issuance of a generic communication. On August 21, 2012, the NRC staff held a public meeting with the Nuclear Energy Industry (NEI) and industry to discuss industry-proposed actions to address these URIs. By letter dated October 12, 2012, "Treatment of NPH in the Integrated Safety Analysis" (ADAMS Accession No. ML12296A036), NEI provided the background and industry's basis for the fuel facilities' current analyses of NPH in their ISAs. The NRC staff considered the information in NEI's letter during the development of this GL.

On April 11, 2013, the NRC staff held a Category 2 public meeting with the industry in Atlanta, Georgia, to discuss the status of several regulatory initiatives involving the fuel cycle industry, including the URIs regarding the treatment of hazards from natural phenomena events. The meeting summary can be found under ADAMS Accession No. ML13113A251. On June 11, 2013, during the NRC's Fuel Cycle Information Exchange, the staff discussed the status of the initiatives for the evaluation of lessons from the Fukushima Dai-ichi accident at fuel cycle facilities. The staff presentation (ADAMS Accession No. ML13168A057) was part of a panel discussion on post-Fukushima issues that included stakeholders direct interaction with staff on topics related to the treatment of NPH.

APPLICABLE REGULATORY REQUIREMENTS

- 10 CFR 40.31(j)(1)(ii)
- 10 CFR 40.31(j)(3)(ii), "Types of accidents"
- 10 CFR 70.22(i)
- 10 CFR 70.22(f)
- 10 CFR 70.61(a)-(e)
- 10 CFR 70.62(c), "Integrated safety analysis"
- 10 CFR 70.64(a)(2), "Natural phenomena hazards"
- 10 CFR 70.65(b)

The staff provides additional guidance on the regulatory acceptance criteria for the review of a license application and ISA in NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," and NUREG-1513, "Integrated Safety Analysis Guidance Document."

Appendix D to Chapter 3 of NUREG-1520 provides additional guidance for addressing accident sequences that may result from NPH in the context of a license application and ISA.

REQUESTED ACTIONS

The NRC requests that all addressees take the following actions:

- (1) Within 90 days of the date of this letter, all addressees are requested to:
 - a. Submit the definitions of "unlikely," "highly unlikely," and "credible" in evaluating natural phenomena events in the ISA such as earthquakes, tornadoes, tornado missile impacts, floods, hurricanes, and other wind storms.
 - b. Submit a description of the licensee's safety assessment for the licensing and design basis natural phenomena events, including the following information:
 - i. likelihood and severity of the natural phenomena events, such as earthquakes, tornadoes, floods, hurricanes, and other wind storms
 - ii. accident sequences as a result of natural phenomena event impacts to facility structures and internal components
 - iii. assessment of the consequences for the accident sequences from item ii that result in intermediate and/or high consequence events
 - iv. items relied on for safety to prevent or mitigate the consequences of the events from items ii and iii
 - c. For facilities subject to 10 CFR Part 70, Subpart H requirements, submit a description of the results of the ISA review used to comply with 10 CFR 70.62(c), identifying the characteristics of the licensing and design basis natural phenomena events applicable to the site that evaluated possible changes in the methodology, likelihood, and severity of natural phenomena events with those used in the original design, evaluation, and licensing of the facility.
 - d. Submit for staff review a summary of the results of any facility assessments or walk downs, if performed, to identify and address degraded, nonconforming, or unanalyzed conditions that can affect the performance of the facility under natural phenomena and have available for NRC inspection the documentation of the qualifications of the team.

Note: Licensees or facilities subject to 10 CFR 70.64(a)(2) may reference sections of their license application and/or ISA summaries as a response to applicable requested actions.

- ~~(2) If an addressee identifies that a change in the facility safety assessment for NPH is needed, the NRC requests that the addressee submit a plan for NRC staff review, pursuant to 10 CFR 70.22(d) and 10 CFR 40.31, within 180 days of the date of this letter that considers the following, as required by 10 CFR 70.62(a)(1) or license conditions:~~

- ~~a. The evaluation basis for NPH events.~~

- ~~b. A review of safety margins to determine inherent conservatism in the design or as-built condition of the facility, as well as accident progression, to verify if the current state or design of the facility can compensate for the increased hazard.~~
- ~~c. SSCs or items relied on for safety to protect workers and the public from intermediate and high consequence events.~~
- ~~d. Description of administrative provisions, including maintenance, periodic testing and inspection program, and emergency procedures and preparedness, to prevent and mitigate the consequences of natural phenomena events.~~
- ~~e. Proposed modifications to the facility SSCs and a schedule with an estimate of completion of the proposed modifications.~~

REQUIRED RESPONSE

In accordance with 10 CFR 40.31(b) and 10 CFR 70.22(d) the Commission may require further statements to determine if the agency should modify or revoke a facility license or take other action. Therefore, the NRC requires addressees to respond as described below:

Within 90 days of the date of this GL, the NRC requires each addressee to submit a written response consistent with the requested actions and information. If an addressee cannot meet the requested response date, the addressee shall provide a response within 30 days of the date of this GL. In either case, each addressee must address in its response any alternative course of action that it proposes to take, including the basis for the acceptability of the proposed alternative course of action and estimated completion dates.

Addressees must submit the required written response, signed under oath or affirmation, to the NRC, ATTN: Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, in accordance with 10 CFR 70.5, "Communications." In addition, addressees must submit a copy of the response to the Region II Regional Administrator.

REASONS FOR INFORMATION REQUEST

The NRC is requesting this information because after a review of operating fuel cycle facilities documentation and inspections, the NRC staff was unable to validate that the facilities were in compliance with their licensing basis for NPH. The inspections found that many operating fuel cycle facilities lacked facility design information, that there were significant variations in the level of detail and rigor in the facility ISAs, that the assumptions used in developing the safety analysis were not clearly described, and that some supporting analyses were limited or missing.

BACKFIT DISCUSSION

This GL is addressed to applicants for and holders of specific source licenses issued under 10 CFR Part 40, and applicants for and holders of special nuclear materials licenses for fuel cycle facilities under 10 CFR Part 70.

Applicants and licensees under Part 40 are not protected by any backfitting provisions. Therefore, no further consideration of backfitting is needed with respect to Part 40 applicants and licensees.

Applicants and licensees under Part 70 are protected by the backfitting provision in 10 CFR 70.76, "Backfitting." However, this GL would not constitute backfitting under 10 CFR 70.76. ~~First, this GL only asks addressees to provide information regarding their facilities' compliance with the existing applicable regulatory requirements as discussed in this GL. Information collection and reporting requirements are not subject to the purview of the Backfit Rule.~~

~~Second, the information requested in this GL concerns the content of ISAs and the supporting documentation for the ISAs with respect to NPH. NPHs were not a licensing requirement at the time of initial licensing, and, therefore, were not reviewed by the NRC at that time. The NRC required consideration of NPH as part of the September 2000 rulemaking (65 FR 56211; September 18, 2000) adding Subpart H—which required the development of an ISA and the submission and NRC approval of an ISA summary. See 10 CFR 70.66. The NRC's review and approval of the ISA summaries did not involve a comprehensive review of the underlying ISAs, including the adequacy of either the ISAs' consideration of NPH or the supporting documentation. Nor had the NRC staff conducted any prior methodological inspections of the implementation of the ISA approaches with respect to NPH. Therefore, even if the NRC were to require the Part 70 licensees who are subject to this GL to make changes to their facility-based upon inadequate information in the ISA itself or supporting documentation, this would not be considered backfitting. This is because the NRC did not provide any prior approval or position with respect to the ISA and supporting documentation with respect to NPH (except to the extent that ISA information was directly expressed in the ISA summary).~~

~~Third, fuel cycle facility licensees are required to "maintain," *inter alia*, ISAs and ISA summaries under 10 CFR 70.62. Any errors, omissions or failures to properly address applicable NRC requirements in ISA summaries, the underlying ISAs, and information necessary to support the ISA (required to be developed and maintained by various provisions in Part 70), must be addressed and reflected in the updated ISAs and ISA summaries required by 10 CFR 70.62. Therefore, such information developed to address any fuel cycle licensee's omissions or errors in documenting compliance with applicable NRC requirements on natural hazards, which is the subject of this GL, is a pre-existing regulatory obligation of the licensees. Any activities which a fuel cycle facility licensee must undertake to comply with 10 CFR 70.62 is not backfitting.~~

~~Assuming as a result of information submitted by licensees in response to this GL, the NRC takes regulatory action (based on the existing interpretation of the regulation) requiring licensees to modify either their ISA summaries, or underlying ISAs, or to modify their facilities to comply with their approved ISA summaries with respect to NPH, and if these modifications are considered to be backfitting, then the NRC believes such action would be necessary to ensure compliance with licensees' previously approved ISA summaries and/or the performance requirements of 10 CFR 70.61. these NRC actions would fall under the "compliance exceptions" in 10 CFR 70.76(a)(4)(i) and/or (ii), which excepts the NRC from preparing a backfit analysis to support a backfitting action needed for compliance.~~

~~The NRC believes that the compliance exception may be properly invoked, because the NRC's action (and any modification of an ISA summary, ISA or the facility itself) would not be based on: (i) a new or different NRC position on the criteria or acceptance standards with respect to consideration of NPH; or (ii) a new or different interpretation of the applicable NRC regulations in 10 CFR Part 70, Subpart H with respect to consideration of NPH.~~

FEDERAL REGISTER NOTIFICATION

A notice of opportunity for public comment on this GL was published in the *Federal Register* on August 8, 2014 (79 FR 46472). Comments were received from Stephen McDuffie (ADAMS Accession No. ML14281A266) and the Nuclear Energy Institute (ADAMS Accession No. ML14316A411). The NRC staff considered all comments that were received. The NRC staff's evaluation of the comments is publicly available through the NRC's ADAMS Accession No. ML14328A036.

CONGRESSIONAL REVIEW ACT

This GL is not a rule as defined in the Congressional Review Act (5 U.S.C. §§ 801-808).

PAPERWORK REDUCTION ACT STATEMENT

This GL contains information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved by the Office of Management and Budget, approval number 3150-XXXX.

The burden to the public for these mandatory information collections is estimated to average 56 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of these information collections, including suggestions for reducing the burden, to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to INFOCOLLECTS.RESOURCE@NRC.GOV; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-XXXX), Office of Management and Budget, Washington, DC 20503.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

CONTACT

Please direct any questions about this matter to the technical contact listed below, or to the appropriate Office of Nuclear Material Safety and Safeguards project manager.

Marissa G. Bailey, Director
Division of Fuel Cycle Safety, Safeguards,
and Environmental Review
Office of Nuclear Material Safety
and Safeguards

Technical Contact: Jonathan Marciano, NMSS
301-287-9063
e-mail: Jonathan.Marciano@nrc.gov

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DATE	12/22/2014	1/13/2015	3/09/2015	3/ 11 /2015	3 / /2015	

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NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Commissioner Baran

SUBJECT: SECY-15-0045: ISSUANCE OF GENERIC LETTER
2015-01, "TREATMENT OF NATURAL PHENOMENA
HAZARDS IN FUEL CYCLE FACILITIES"

Approved XX Disapproved _____ Abstain _____

Not Participating _____

COMMENTS: Below _____ Attached XX None _____



SIGNATURE

5/15/15

DATE

Entered in STARS" Yes XX No _____

Commissioner Baran's Comments on SECY-15-0045, "Issuance of Generic Letter 2015-01, 'Treatment of Natural Phenomena Hazards in Fuel Cycle Facilities'"

As part of the agency's response to the March 2011 nuclear accident in Japan, the NRC staff focused on ensuring that U.S. fuel cycle facilities could withstand or respond to severe external events from natural phenomena, such as earthquakes and floods. The staff began by issuing Information Notice 2011-08, which recommended that fuel cycle facilities consider mitigating actions related to natural phenomena. In 2011 and 2012, NRC also conducted inspections at selected fuel cycle facilities but was not able to fully assess the capabilities of those facilities to adequately mitigate the consequences of credible natural phenomena events. According to the staff, "[t]he inspections found that many operating fuel cycle facilities lacked facility design information, that there were significant variations in the level of detail and rigor in the facility [Integrated Safety Analyses], that the assumptions used in developing the safety analysis were not clearly described, and that some supporting analyses were limited or missing." As a result, the NRC inspectors were unable to verify that these facilities were in compliance with their licensing bases and existing regulatory requirements regarding preparedness for natural phenomena hazards. The staff concluded that these issues were generic across the fuel cycle facility fleet.

In order to fully assess the capabilities of fuel cycle facilities to prevent or mitigate the consequences of natural phenomena events, the NRC staff developed Generic Letter 2015-01. This generic letter will request that licensees submit information to demonstrate compliance with existing regulatory requirements and applicable license conditions regarding the treatment of natural phenomena events in the facilities' integrated safety assessments. The staff will then determine if additional regulatory action is necessary to ensure that licensees are in compliance with their existing licensing bases and NRC regulations.

This generic letter has been developed with extensive input from within the agency and from external stakeholders. The Advisory Committee on Reactor Safeguards has no objection to the issuance of the generic letter, and the Committee to Review Generic Requirements has endorsed the generic letter. In my view, issuing this letter is the logical next step in the staff's efforts to apply the lessons learned from the Fukushima accident to fuel cycle facilities. Therefore, I approve the staff's issuance of Generic Letter 2015-01.