COMSECY-13-0030

November 12, 2013

MEMORANDUM TO: Chairman Macfarlane
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff

FROM: Mark A. Satorius ***/RA/***
Executive Director for Operations

SUBJECT: STAFF EVALUATION AND RECOMMENDATION FOR JAPAN LESSONS-LEARNED TIER 3 ISSUE ON EXPEDITED TRANSFER OF SPENT FUEL

The purpose of this memorandum is to provide the Commission with information and a recommendation on whether additional study is warranted to assess possible regulatory action to require expeditious transfer of spent fuel from nuclear power plants' spent fuel pools to dry cask storage.

SUMMARY:

The accident at the Fukushima Dai-ichi nuclear facility in Japan led to questions about the safe storage of spent fuel and whether the U.S. Nuclear Regulatory Commission (NRC) should require expedited transfer of spent fuel to dry cask storage at nuclear power plants in the United States (U.S.). The staff completed a regulatory analysis (provided in Enclosure 1 of this memorandum) to determine if additional study of this issue is warranted (i.e., on whether reactor licensees should be required to reduce the amount of spent fuel stored in their spent fuel pools (SFPs)). The staff has considered a broad history of NRC oversight of spent fuel storage, SFP operating experience (domestic and international), past studies of SFP safety, and the October 2013 SFP study. In addition, the staff considered international practices related to the transfer of spent fuel from wet to dry storage, and stakeholder comments received during two public meetings.

To determine whether regulatory action might be warranted, the staff has conducted an analysis of expediting the transfer of spent fuel assemblies. As part of its regulatory analysis, the staff first conducted a safety goal screening evaluation using the Commission's safety goal policy statement. Although the agency's guidance would normally allow the staff to stop the evaluation upon determining that the proposed action does not provide a sufficient safety enhancement to meet the threshold of the safety goal screening, the staff proceeded to perform a cost benefit analysis to provide the Commission additional information. The staff concludes that the

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expedited transfer of spent fuel to dry cask storage would provide only a minor or limited safety benefit (i.e., less than safety goal screening criteria), and that its expected implementation costs would not be warranted. The staff therefore recommends that additional studies and further regulatory analyses of this issue not be pursued, and that this Tier 3 Japan lessons-learned activity be closed.

Some staff expressed comments that resulted in a non-concurrence on this memorandum, which is provided as Enclosure 2. The non-concurrence advocates performing additional studies of possible cost-effective approaches to improving the safety of SFPs. The non-concurrence also suggests that the supporting analyses should have been performed differently, that several policy issues should be identified to the Commission, and that the resulting information should be presented in a more neutral manner. The staff made improvements to this memorandum in response to the questions and comments identified in the non-concurrence. However, after considering the analysis results, operating history, and limited safety benefits of possible plant changes, the staff finds that further study would be unlikely to support a requirement that reactor licensees expedite the transfer of spent fuel from their SFPs into dry cask storage.

BACKGROUND:

There are a variety of postulated events or conditions that can challenge the ability of a SFP to provide adequate cooling to spent fuel assemblies. A loss of heat removal from the SFP, which could be caused by a loss of electrical power, produces a slowly evolving event that could be mitigated with a high probability of success by plant staff and available equipment. Potentially more significant events involve coolant inventory loss resulting from a loss of pool integrity. These events could result from low likelihood initiators such as a large earthquake producing ground accelerations well above those considered in the design of the facility. Past and recent studies have shown that these types of events could potentially lead to large radiological releases. Common to all event scenarios, significant radiological releases can only result if spent fuel heat loads exceed heat removal capacity such that fuel cladding temperature increases are sufficient to cause zirconium cladding ignition and resultant fire. However, regardless of the initiator, this outcome evolves relatively slowly, with time for mitigative and/or protective actions to prevent a release or otherwise ensure public health and safety.

On March 11, 2011, a 9.0-magnitude earthquake struck Japan and was followed by a 45-foot tsunami, which resulted in extensive damage to the nuclear power reactors at the Fukushima Dai-ichi facility. After the onset of core damage in some units, there were significant concerns about the integrity of SFPs and the possible release of radioactive materials from the spent fuel assemblies. However, subsequent inspections determined that pool integrity had been maintained, the integrity of the spent fuel cladding had not been challenged, and equipment to restore coolant inventory had been successfully deployed, despite radiological hazards and extensive damage to the surrounding structures from the tsunami and hydrogen explosions. While the SFPs and the spent fuel assemblies at the site remained intact, the event led to questions about the safe storage of spent fuel and whether the NRC should require expedited transfer of spent fuel to dry cask storage at nuclear power plants.

In the summer of 2011, the staff initiated a research project entitled, “Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water

Reactor." The resultant report, dated October 2013 (commonly referred to as the SFP study), can be accessed in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML13256A342. The purpose of the SFP study was to provide additional information to help determine if accelerated transfer of spent fuel from the SFP to dry cask storage significantly reduces risks to public health and safety. The SFP study provides consequence estimates for a hypothetical SFP accident initiated by a low likelihood seismic event at a reference plant for both a fully loaded (high-density) and minimally loaded (low-density) SFP. The SFP study contributed to the resolution of this Tier 3 issue by providing a measure of the change in potential consequences resulting from a change in spent fuel storage density for a reference plant.

In SECY-11-0137, "Prioritization of Recommended Actions To Be Taken in Response to Fukushima Lessons Learned," dated October 3, 2011 (ADAMS Accession No. ML11272A111), the staff identified six additional issues that may warrant regulatory action but were not included with the Near-Term Task Force (NTTF) recommendations. One additional issue was the expedited transfer of spent fuel to dry cask storage. The staff judged this issue to warrant further consideration and prioritization based on potential safety significance, nexus to NTTF recommendations, and other ongoing staff activities. As directed by a Staff Requirements Memorandum (SRM), SRM-SECY-11-0137, dated December 15, 2011 (ADAMS Accession No. ML113490055), the staff conducted an assessment of whether this issue should be included with the Japan lessons-learned activities and whether any regulatory action is recommended or necessary. The staff applied the same prioritization process described in SECY-11-0137. In SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," dated February 17, 2012 (ADAMS Accession No. ML12039A103), the staff prioritized this issue in the Tier 3 category since it required further staff study to determine if regulatory action is warranted.

In SECY-12-0095, "Tier 3 Program Plans and 6-Month Status Update in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Subsequent Tsunami," dated July 13, 2012 (ADAMS Accession No. ML12165A092), the staff provided a five-step plan to evaluate whether regulatory action is warranted for the expedited transfer of spent fuel from SFPs into dry cask storage. After submitting the Tier 3 program plan, the staff received direction in several SRMs:

- In SRM-M120607C, "Staff Requirements—Meeting with the Advisory Committee on Reactor Safeguards, 9:30 A.M., Thursday, June 7, 2012, Commissioners' Conference Room, One White Flint North, Rockville, Maryland (Open to Public Attendance)," dated July 16, 2012 (ADAMS Accession No. ML121980043), the Commission provided the staff with direction on several topics on additional research activities (e.g., human reliability analysis and comparative assessment to previous SFP studies) that the SFP study should address.

- In SRM-M120807B, "Staff Requirements—Briefing on the Status of Lessons Learned from the Fukushima Dai-ichi Accident, 9:00 A.M., Tuesday, August 7, 2012, Commissioners' Conference Room, One White Flint North, Rockville, Maryland (Open to Public Attendance)," dated August 24, 2012 (ADAMS Accession No. ML122400033), the

Commission directed the staff to address international practices related to spent fuel management as part of the Tier 3 program plan for expedited transfer of spent fuel.

In a memorandum to the Commission entitled, "Updated Schedule and Plans for Japan Lessons-Learned Tier 3 Issue on Expedited Transfer of Spent Fuel," dated May 7, 2013 (ADAMS Accession No. ML13105A122), the staff outlined a three phase plan for evaluating whether regulatory action is warranted to require licensees to expedite transfer of spent fuel from SFPs to dry cask storage. The program plan calls for preparing this memorandum under Phase 1 to help determine if additional study is warranted. If the results of Phase 1 would indicate that additional study is warranted, Phases 2 and 3 of the program plan would be conducted to refine assumptions used in the analyses to determine whether any regulatory action is warranted. The Phase 1 analysis is the subject of this memorandum and considers the results of the SFP study along with previous studies and operating experience. The results are discussed below.

DISCUSSION:

In evaluating if additional studies are needed on whether to require expedited transfer of spent fuel to dry cask storage, the staff has considered a broad history of NRC oversight of spent fuel storage, SFP operating experience (domestic and international), past studies of SFP safety, and the October 2013 SFP study. The NRC's regulatory activities and past studies have shown that SFPs are effectively designed to prevent accidents that could affect the safe storage of spent fuel. The past studies of SFP safety and the October 2013 SFP study provide detailed assessments of SFP safety. Operating experience has shown that SFPs have safely withstood challenging events, maintaining structural integrity and a large inventory of coolant to protect the stored fuel.

Design and Licensing

The SFPs at operating U.S. reactors were designed and licensed to maintain a large inventory of coolant to protect and cool the fuel under accident conditions, including earthquakes. SFPs were constructed to be robust structures with very thick steel-reinforced concrete walls and floors. The pools' thick walls, floors, and stainless steel liner help maintain the coolant inventory and protect the fuel from the effects of natural phenomena. SFPs are generally configured to protect against a substantial loss of coolant inventory by locating penetrations in the SFP wall above the top of the stored fuel, and by providing anti-siphon features for piping that extend below the top of the fuel within the pool. These features limit the likelihood of losing substantial coolant inventory due to mechanical failures or operational errors. Through the NRC's regulatory oversight for all SFPs, the staff has determined that they provide a safe means of storing spent fuel.

Operating Experience

Operating experience with spent fuel storage in pools confirms that SFPs have provided adequate protection of public health and safety. The staff previously completed a detailed review of SFP operating experience in NUREG 1275, Volume 12, "Operating Experience

Feedback Report, Assessment of Spent Fuel Cooling," dated February 1997 (ADAMS Accession No. ML010670175), and the staff performs annual reviews of U.S. and international operating experience with spent fuel storage and handling. The robustness of SFP designs in preventing significant loss of inventory or cooling has been demonstrated by the minor impact of events identified in these reviews. For example, early problems with seal leakage around large penetrations above the elevation of the stored fuel have been resolved by seal design changes. Operational issues affecting configuration control of SFP cooling and purification systems also have decreased in frequency. Operating experience reviews have indicated that events involving loss of coolant inventory or loss of forced cooling have had no more than a minor effect (e.g., increases in water temperature) on spent fuel storage conditions.

The staff has reviewed information on the effect of earthquakes up to several times greater than design-basis values on the integrity of SFPs and has determined that the SFPs are robust and in all cases have maintained safe storage of spent fuel. The staff has reviewed information on SFP performance during the March 11, 2011, Great Tohoku Earthquake and the July 16, 2007, Niigataken Chuetsu-Oki earthquake, which affected 20 operating reactors in Japan, including Fukushima Dai-ichi and Kashiwazaki-Kariwa. Of the SFPs at these 20 reactors, there was no observed significant damage of the SFP structure or any penetrations (i.e. no loss of integrity), and any water loss caused by sloshing resulted in only a minor loss of coolant inventory. A complete discussion of this evaluation is provided in Section 4.3 of the SFP study. Additionally, the Mineral, Virginia, earthquake of August 23, 2011, which occurred near the North Anna nuclear power plant, produced ground motions near the design basis for that plant, and did not result in damage or loss of water from that plant's SFP.

Recent Regulatory Actions To Enhance Safety

In response to the Fukushima Dai-ichi accident, the staff is currently implementing regulatory actions, which originated from the NTTF recommendations, to further enhance reactor and SFP safety. On March 12, 2012, the staff issued Order EA-12-051, "Issuance of Order To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," (ADAMS Accession No. ML12054A679), which requires that licensees install reliable means of remotely monitoring wide-range SFP levels to support effective prioritization of event mitigation and recovery actions in the event of a beyond-design-basis external event. Although the primary purpose of the order was to ensure that operators were not distracted by uncertainties related to SFP conditions during the accident response, the improved monitoring capabilities will help in the diagnosis and response to potential losses of SFP integrity. In addition, on March 12, 2012, the staff issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735), which requires licensees to develop, implement, and maintain guidance and strategies to maintain or restore SFP cooling capabilities, independent of alternating current power, following a beyond-design-basis external event. These requirements ensure a more reliable and robust mitigation capability is in place to address degrading conditions in SFPs than was assumed in the SFP study. For the purpose of evaluating the potential benefits of expedited transfer of spent fuel to dry cask storage, the enclosed analysis used a conservative approach to mitigation by crediting successful mitigation to the low-density SFP storage alternative (i.e., conditions following expedited transfer) and assumed no successful mitigation for the high-density SFP storage regulatory baseline.

Evaluation of Expedited Transfer of Spent Fuel to Dry Cask Storage

To evaluate whether additional studies are needed to assess possible regulatory actions, the staff has prepared the enclosed regulatory analysis of expedited transfer of spent fuel to dry cask storage. A regulatory analysis is an established analytical tool to help determine if a proposed regulatory action should be implemented.

In the first step of the analysis, the staff used the quantitative health objectives (QHO)[1] in conducting its safety goal screening evaluation. The QHOs are used as a surrogate for the safety goal as outlined in the Commission's safety goal policy statement. Although the QHOs were developed based on the risk from severe reactor accidents, they provide the only readily-available risk criteria for regulatory decisionmaking regarding non-reactor accidents. A further discussion of the basis and background for using the QHOs in assessing SFP accidents is included in the October 2013 SFP study and in Section 3 of Enclosure 1. The staff relied on information from past studies, the October 2013 SFP study, and operating experience to conduct the safety goal screening evaluation. The safety goal screening evaluation concludes that SFP accidents are a small contributor to the overall risks for public health and safety (less than one percent of the QHOs), and therefore any reductions in risk associated with expedited transfer of spent fuel would only have a marginal safety benefit. Due to the safety goal screening criterion not being satisfied, the staff recommends that no further generic assessments be pursued. Although the regulatory analysis guidelines would normally allow the staff to stop the evaluation at this step, the staff proceeded to perform a cost-benefit analysis to provide additional information for the Commission's consideration.

In its cost-benefit analysis, the staff develops estimates of costs and quantified benefits, together with a conclusion as to whether the proposed regulatory action is cost-beneficial. "Cost-beneficial" means that the benefits of the proposed action are equal to, or exceed, the costs of the proposed action. The NRC's practice of assessing whether potential benefits of new regulations warrant the associated costs is similar to that used by other federal agencies. Within the enclosed analysis, the staff provides a "base case" which generally used conservative assumptions for key parameters such as conditional probabilities of SFP liner failures and loss of adequate cooling to increase the calculated benefits of expedited transfer of spent fuel (i.e., to skew the calculations towards pursuing additional studies). The benefits calculated for the base case evaluations are less than the estimated costs for requiring expedited transfer of spent fuel to dry cask storage. Although the base case is used as the

[1] The two QHOs are a prompt fatality QHO and a latent cancer fatality QHO. The prompt fatality QHO is that the risk to an average individual in the vicinity of a nuclear power plant of prompt fatalities that might result from reactor accidents should not exceed 1/10 of 1 percent (0.1 percent) of the sum of prompt fatality risks resulting from other accidents to which members of the U.S. population are generally exposed. This represents a frequency of prompt fatalities of less than $5x10^{-7}$ per year for an average individual within 1 mile of a plant. The cancer fatality QHO is that the risk to the population in the area near a nuclear power plant of cancer fatalities that might result from nuclear power plant operation should not exceed 1/10 of 1 percent (0.1 percent) of the sum of cancer fatality risks resulting from all other causes. This represents a frequency of cancer fatalities of less than $2x10^{-6}$ per year for an average individual within 10 miles of a plant. ("Safety Goals for Nuclear Power Plant Operation," NUREG-0880, Rev. 1, issued May 1983.)

primary basis for the staff's recommendation, the staff also analyzed additional cases where key parameters are varied to provide low and high estimates of the calculated benefits. The staff used bounding or conservative values in the analysis for several parameters, particularly in the high estimate cases, to ensure that design, operational, and other site variations among the new and operating reactor fleet were addressed and to generally increase the calculated benefits from the proposed action.

Sensitivity studies were also conducted on key factors such as the dollars per person-rem conversion factor, population density, habitability criteria and consideration of consequences beyond 50 miles to measure each attribute's effect upon the overall result. The sensitivity of the dollars per person-rem conversion factor is important to consider because related guidance is currently being updated. The sensitivity of consequences beyond 50 miles is important to consider for accidents involving SFP fires, as the spread of radioactive materials could extend over long distances. The supporting analysis used key insights from operating experience, the October 2013 SFP study, and previous studies on SFP safety, such as the plant damage state for seismic events, probability of a release for specific pool damage states, and the expected amount and type of radioactive material released. The various cases and sensitivity studies show that while the impacts on public health and safety for an average individual are, for the most part, very low, collective dose and economic consequences for these low probability events can be very large.[2] The combination of high estimates for important parameters assumed in some of the sensitivity cases presented in Enclosure 1 result in large economic consequences, such that, the calculated benefits from expedited transfer of spent fuel to dry cask storage for those cases outweigh the associated costs (see Section 4.4.1.4 in enclosed regulatory analysis). However, even in these cases, there is only a limited safety benefit when using the QHOs and the expected implementation costs would not be warranted. In addition, in the staff's judgment, the various assumptions made in the analysis of the "base case" result in an overall cost-benefit assessment that is appropriately conservative for a generic regulatory decision and justify using the "base case" as the primary basis for the staff's recommendation. Based on the generic assessment and the other considerations detailed in this memorandum, the staff finds that additional studies are not needed to reasonably conclude that the expedited transfer of spent fuel to dry cask storage would provide only a minor or limited safety benefit, and that its expected implementation costs would not be warranted.

The staff evaluated seismic risks and other types of severe events when considering the safety significance and the relationship of costs and benefits of possible regulatory actions to expedite removing fuel assemblies from SFPs. In past SFP studies and the October 2013 SFP study, the staff has evaluated seismic events because they have been identified as the largest risk contributor to SFP safety. Based on the latest seismic hazard curves developed for nuclear power plant sites in the central and eastern United States, the overall estimated frequency of significant spent fuel damage continues to be very low for these facilities (approximately five times per million years). Updated structural and seismic hazard information for operating reactors in the western United States is being developed as part of NTTF Recommendation 2.1 activities. Considering the robust designs of SFPs, especially in more seismically active areas

[2] The staff notes that in its SRM on SECY-12-0110, the Commission stated "economic consequences should not be treated as equivalent in regulatory character to matters of adequate protection of public health and safety."

in the western United States, the staff concludes that public health and safety are adequately protected. At the completion of the NTTF Recommendation 2.1 seismic reevaluation, the staff will confirm that the seismic risk for SFPs is consistent with that considered in the enclosed analysis. Because various studies and regulatory changes implemented following the terrorist attacks of September 11, 2001, have considered security issues associated with SFPs, malevolent acts are not included in this analysis. The details of the staff's review of security issues involve sensitive and classified information and are therefore not available to the public.

In addition to assessing whether further studies of expedited transfer of spent fuel to dry cask storage are warranted, the SFP study and staff's interactions with stakeholders identified other possible improvements to the storage of spent fuel. Examples include the possible investigation of alternate loading patterns (e.g., the 1 x 8 high-density loading pattern assessed in the SFP study, in addition to the standard 1 x 4 high-density loading pattern), capability of licensees to directly offload fuel into more coolable patterns, and the possible enhancement of mitigation strategies during identified periods when the heat load from recently discharged fuel assemblies is especially high. The staff has considered these possible improvements, and notes that these alternatives would likely involve lower costs than would the expedited transfer of spent fuel to dry cask storage. However, these alternatives would provide only a limited safety benefit when using the QHOs, and their implementation costs would not be warranted. This finding reflects the low probability of the initiating events that would challenge the integrity of the SFPs and the fact that these alternative actions would have similar or lesser safety benefit in comparison to those estimated for the expedited transfer of spent fuel. However, licensees will be informed of and encouraged to assess and implement, as appropriate, such improvements on their own initiative to help manage the risks associated with plant specific SFP designs, operating practices, and mitigation capabilities.

International Practices

As directed in SRM-M120807B, the staff assessed international practices related to spent fuel storage and determined that current U.S. fuel storage practices are consistent with international practices. The staff determined that commercial U.S. operating reactor sites typically have greater inventories of spent fuel stored on site than otherwise comparable foreign reactors. This principally reflects the longer period of operation and the high capacity factors that U.S. operators have achieved. Countries with options for centralized storage, either in preparation for disposal (e.g., Sweden) or reprocessing (e.g., England, France, and Japan), have nevertheless adopted high-density storage at reactor sites. The staff's review did not identify any country with an explicit policy for early transfer of fuel to dry or centralized storage to maintain low density storage in the onsite SFPs.

Stakeholder Interactions

To provide additional insights on the need for regulatory action, the staff interacted with various stakeholders. The nuclear industry provided insights to the staff through various interactions and also through reports prepared by the Electric Power Research Institute. Several nongovernmental organizations and individuals provided correspondence and attended public meetings to give information to the staff. Public meetings were held on August 22, 2013 (meeting summary in ADAMS under Accession No. ML13253A162), and September 18, 2013 (meeting summary in ADAMS under Accession No. ML13281A201), to provide stakeholders a forum for discussing and asking questions about the June 2013 draft SFP study, provide an overview of the analysis conducted in this memorandum, and solicit feedback. Most of the individuals and organizations participating in the meetings said they favored expedited transfer of spent fuel to dry cask storage. Several points were raised by stakeholders, including the staff's focus on the seismic initiator in the SFP study, no consideration of partial SFP drainage interfering with air cooling, and limited alternatives being considered (e.g., not assessing low density, open frame rack designs). Each of these has been addressed by the conservative assumptions used in the enclosed analysis. The industry provided its views that spent fuel is continuing to be stored safely in SFPs. A transcript of the September 18, 2013 meeting is available in ADAMS under Accession No. ML13277A215. The staff considered this stakeholder feedback in the development of this memorandum. The staff also benefited from internal discussions, including a non-concurrence filed by a member of the staff. Addressing the issues raised by the non-concurrence process improved this memorandum, but the staff was not able to resolve all of the differing opinions offered (see Enclosure 2). Additionally, on October 2, 2013, the staff briefed the Advisory Committee on Reactor Safeguards (ACRS) on the results of its assessments and evaluations, as well as the resulting conclusions and recommendations. The staff is planning another briefing of the ACRS in December 2013. The ACRS is expected to provide a letter to the Commission in December 2013, regarding its review of the staff's assessment and its recommendations about whether regulatory action might be warranted and whether additional studies should be pursued.

Within this Tier 3 analysis, the staff has considered the agency's activities on the waste confidence generic environmental impact statement (GEIS) and rulemaking, and it has ensured that the availability of these documents and interactions with stakeholders are coordinated to facilitate the public's involvement in these activities. Although this Tier 3 analysis was not specifically referenced in the draft GEIS, those who prepared the draft GEIS were aware of the conclusions in this Tier 3 analysis, and the staff has coordinated this activity with the relevant sections of the draft GEIS. To facilitate the public's ability to provide input, a draft of the October 2013 SFP study was released for public review and comment on July 1, 2013. Additionally, the draft evaluation of this Tier 3 issue was released to the public on September 26, 2013, well before the draft GEIS public comment period ends on December 20, 2013.

Staff Recommendation

The staff's assessment concludes that the expedited transfer of spent fuel to dry cask storage would provide only a minor or limited safety benefit, and that its expected implementation costs would not be warranted. Therefore, the staff recommends that no further generic assessments[3] be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage and that this Tier 3 Japan lessons-learned activity be closed.

SECY, please track.

Enclosures:
1. Regulatory Analysis for
   Japan Lessons Learned Tier 3 Issue
   on Expedited Transfer of Spent Fuel
2. Non-Concurrence Package 2013-013

cc: SECY
OCA
OGC
OPA
CFO

[3] The staff will confirm that the seismic risk for western nuclear power plant SFPs is consistent with the analysis in the enclosure at the completion of the NTTF Recommendation 2.1 seismic reevaluation activity.

Staff Recommendation

The staff's assessment concludes that the expedited transfer of spent fuel to dry cask storage would provide only a minor or limited safety benefit, and that its expected implementation costs would not be warranted. Therefore, the staff recommends that no further generic assessments[3] be pursued related to possible regulatory actions to require the expedited transfer of spent fuel to dry cask storage and that this Tier 3 Japan lessons-learned activity be closed.

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ADAMS Accession Nos. Package ML13273A572 *Concurrence via e-mail

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