Recommendations for Enhancement of the Independent Spent Fuel Storage Installation Inspection Program

Section 1. Background

The Independent Spent Fuel Storage Installation (ISFSI) inspection activities provide oversight of spent nuclear fuel storage at both dry cask storage facilities and wet pool storage facilities licensed under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72 in a manner consistent with the Nuclear Regulatory Commission (NRC) mission. The ISFSI inspection program objectives are to evaluate activities associated with spent fuel storage including fabrication, preoperational testing, canister loadings, and long-term storage; and determine by direct observation and independent evaluation whether licensees adequately implement requirements. ISFSI inspections are performed at operating reactors with co-located ISFSIs and at stand-alone ISFSIs. The ISFSIs are currently inspected on a two-year, not to exceed three years, frequency for recurring loading or monitoring inspections, and throughout the construction, pre-operational testing, and initial loading of a new ISFSI. The program requirements for the ISFSI inspection program are contained in Inspection Manual Chapter (IMC) 2690 and Inspection Procedures (IPs) 60853 through 60858.

As documented in audit report OIG-11-A-12 dated May 19, 2011 (ADAMS Accession No. ML111390338), the Office of the Inspector General (OIG) found opportunities for additional consistency in implementation of the ISFSI inspection program. Specifically, the OIG found that there was no established qualification program or inspection frequency for ISFSI inspections. In response to the audit's recommendation related to inspection frequency, the staff in the Office of Nuclear Material Safety and Safeguards (NMSS) assigned a frequency of every two years, not to exceed three years, for ISFSI inspections. Currently, the NRC conducts ISFSI inspections with regional, resident, and headquarters (HQ) based inspectors and the training requirements for these inspectors vary.

The level of effort allocated to the different ISFSI inspection efforts can be traced back to NRC memorandum dated February 20, 2002, "Response to Regional Input on ISFSI Resources," (ADAMS Accession No. ML020520561). This memorandum contained the Office of Nuclear Reactor Regulation (NRR)/NMSS proposed inspections and estimated resources to implement the program at that time. Over the past 15 years, the resources used for ISFSI inspections varied significantly between the regions.

In September 2018, the NRC received a recommendation to eliminate inspections at ISFSIs from the Nuclear Energy Institute (NEI) as part of the larger operating reactor oversight program (ROP) enhancement.

In response to the issues identified by NRC staff, the OIG, and feedback received from external stakeholders, and an overall desire by the NRC staff to improve the program, a review of the ISFSI inspection program was initiated in June 2019 (ML19155A273). An ISFSI inspection program enhancement working group was formed to evaluate and enhance the NRC's existing ISFSI inspection program by developing a clearer, more risk-informed, comprehensive, and consistent approach to ISFSI inspections across the four regions that focuses on those areas most important to safety. The working group performed an evaluation of the ISFSI inspection program to determine the recommended inspection frequency, inspector training and qualification, inspection level of effort, and program resources, as described below. The areas of security, transportation, vendor inspections and aging management as they relate to ISFSIs

were outside the scope of issues identified by the NRC staff, the OIG and external stakeholders and were therefore not reviewed in the working group's assessment.

Section 2. Methodology and Approach

The ISFSI inspection enhancement working group took a holistic approach to further risk-inform the program by ranking the relative risk of dry cask storage loading activities based on radiation dose to workers and the public, the likelihood of occurrence and consequences of postulated accidents and events, and the defense-in-depth assumptions made by licensees in safety analyses. The working group identified five safety focus areas (risk significant areas) for inclusion in the ISFSI inspection oversight program: Occupational Exposure, Public Exposure, Fuel Damage, Confinement/Canister Integrity and Impact to Plant Operation.

The working group evaluated the ISFSI IPs and ranked the risk of each inspection activity according to the five safety focus areas based on subject matter expertise, previous operating experience, NUREG-1864, "A Pilot Probabilistic Risk Assessment of a Dry Cask Storage System At a Nuclear Power Plant" (ADAMS Accession No. ML071340012), and NUREG/CR-6642, "Risk Analysis and Evaluation of Regulatory Options for Nuclear Byproduct Material Systems" (ADAMS Accession Nos. ML003693052, ML003693334, and ML003693028). Based on this analysis, the working group developed a risk prioritization tool to help inspectors identify the most risk significant activities to inspect from construction and pre-operational activities to initial and subsequent ISFSI loading campaigns.

The working group utilized risk insights as a primary factor in evaluating changes to the program. When the NRC risk-informs its processes, both the probability of an event and its possible consequences are quantitatively examined to understand its importance (risk). The current quantitative ISFSI models only evaluate latent cancer fatality to a member of the public as the consequence factor. The authors of NUREG 1864 state that the scope of the NUREG was solely to demonstrate a methodology to generate PRA models and their limited (i.e., case-specific) application. Therefore, the authors of NUREG 1864 state that no inferences or conclusions should be drawn with regard to the study's regulatory implications. While the working group acknowledged the latent cancer fatality to the public is very low due to the decay time of spent fuel, the working group took into account the caution provided in the study and therefore, considered other risk consequences in its evaluation, including defense in depth considerations, subject matter expertise, occupational worker radiological hazards, and reputational risk associated with potential loss of public confidence.

<u>Stakeholder Feedback</u>

The working group solicited both internal and external feedback through various mechanisms including: regional office concurrence, presentations at the ROP Enhancement monthly public meetings, a presentation at the Division of Fuel Management REG CON, a presentation during the Building a Smarter Fuel Cycle Inspection and Licensing Programs public meeting, and a standalone public meeting on the ISFSI Inspection Enhancement Initiative.

The comments received from internal stakeholders consisted of editorial suggestions that are incorporated in this document, and suggestions for the draft inspection implementation documents that include inspection manual chapters and inspection procedures. The comments and suggestions for the draft IMCs and IPs will be resolved during the implementation process of the enhanced ISFSI inspection program. Additionally, during the working group's assessment, other views were shared that based upon both operational experience and the

available probabilistic risk assessments of ISFSI operations, there was opportunity to further reduce both the level of inspection effort and inspector training requirements for ISFSI loading and monitoring inspections from those recommended in this report.

The comments from external stakeholders included suggestions from the industry to consider margin in determining the scope of the ISFSI inspection program and having resident inspectors perform routine ISFSI inspections. Additionally, NEI sent a letter to the staff providing feedback that was in general agreement with the proposed recommendations except, as stated above, that resident inspectors should perform routine ISFSI inspections. The staff also received two letters from Congressional Representatives disagreeing with a reduction in the overall level of effort dedicated to the inspection of ISFSIs. One of these letters also discussed a lack of public participation and awareness regarding the proposed recommendations.

The staff considered all the comments received from internal and external stakeholders in the development of the recommendations below.

Results

A. Frequency of ISFSI Inspections

The working group used operating experience and subject matter expertise to review inspection results from inspections completed both every two years and every three years, as is currently allowed by the program. The results did not show an increase of issues or violations for those inspections completed on the three-year periodicity versus the typical two-year frequency.

The working group also used risk insights from NUREG/CR-6642 that provided information on nuclear byproduct materials systems. While the study did not include dry cask storage, insights from similar systems were gathered. Only the evaluations of irradiators and fixed radiographic installations were considered in assessing the applicability to a risk-informed ISFSI inspection program. These systems share characteristics of dry cask storage operations in source strength and some operations. For example, self-shielded irradiators are similar in concept to dry cask storage systems given that they include passive storage and monitoring operations. Fixed radiographic installations and other irradiators including pool irradiators compare in concept to dry cask storage loading and unloading operations. The study considered different risk factors, including individual normal risks, industry risks, and accident risks. An assigned priority number was given to each type of inspection, denoting the average number of years between inspections. A priority two is given to fixed radiographic installations and irradiators greater than 10,000 curies, meaning that the licensee is generally inspected on a two-year frequency. A priority five is given to a self-shielded irradiator greater than 10,000 curies, meaning that the licensee is generally inspected on a five-year frequency. Since ISFSI inspections are performed during loading operations whenever possible, they align more closely with the irradiators and fixed radiographic installations inspected on a two-year frequency that include inspection of operational activities, not just passive storage and monitoring.

When combining this comparison of ISFSIs to byproduct material systems with risk insights based on the passive nature of the safety systems of ISFSIs, previous inspection results, and the need for flexibility in the program to time inspections with loading operations and/or the ROP triennial frequency, the working group recommended a triennial inspection frequency. In the triennial frequency the inspection will be performed at least once during the three-year cycle, which aligns with the ROP triennial inspection cycles as defined in IMC 2515, Light-Water Reactor Inspection Program – Operations Phase, Attachment 1.

The working group also evaluated operational experience associated with reactor sites performing extended ISFSI loading campaigns. These campaigns typically occur after permanent cessation of operations, with the intent to completely offload the spent fuel pool to an ISFSI. The working group determined that additional oversight was necessary during these loading campaigns, due to the significant increase in the number of canister loadings in an extended loading campaign, compared to a normal loading campaign. The additional oversight provides the opportunity for the timely evaluation of operational and programmatic activities at decommissioning facilities where staffing is usually reduced. The working group recommends that the frequency of these inspections be revised from "as necessary" to quarterly throughout the extended offloading campaign and once complete return to the triennial frequency. These campaigns occur at an irregular frequency, however when they occur a small increase in inspection effort is expected.

Recommendation 1: Based on the above, the working group recommends that the inspection frequency for routine loading campaigns and monitoring operations at ISFSIs co-located with operating reactors and away-from-reactor (AFR) facilities be extended from every two years, not to exceed three years, to a triennial frequency. The working group also recommends that the inspection frequency for extended loading campaigns be quarterly.

B. Qualification and Training for ISFSI Inspectors

To allow for flexibility and efficiency in the implementation of the ISFSI inspection program, the working group recommends establishing a cross-qualification program for reactor inspectors already fully qualified under IMC 1245, "Qualification Program for New and Operating Reactor Programs," Appendix C1/C2, which will ensure qualification of ISFSI inspectors, regardless of the position of the individual completing the inspection (i.e., the recommended program does not specify whether the inspections should be completed by HQ-based or region-based inspectors or resident inspectors).

The working group recommends that ISFSI inspectors that are not already qualified under IMC 1245, Appendix C1/C2, continue to be qualified using the formal qualification processes currently established and defined in IMC 1246, Appendix B03, "Training Requirements and Qualification Journal for Independent Spent Fuel Storage Installation Inspector" and IMC 1246, Appendix B02, "Training Requirements and Qualification Journal for Spent Fuel Storage and Transportation Inspector."

In recognition that some resident inspectors who have some qualifications in certain aspects of the ISFSI inspection program currently complete inspections of fuel loading campaigns, the working group developed as a part of the cross-qualification program a new "partial qualified" concept that streamlines the qualification and training process for those reactor inspectors already fully qualified under IMC 1245, Appendix C1/C2, and only perform routine ISFSI loading or monitoring inspections. This provides an efficiency to enable staff who will only perform these limited inspections to have requisite expertise and training that aligns with the activities inspected and supplements the training, qualification, and experience those fully qualified reactor inspectors have obtained.

The partial qualification requirements include a combination of formal training courses, individual study and on-the-job training activities. These requirements focus on those areas with most risk significance to ISFSI operations and that require specialized knowledge of information specific to ISFSI loading. These areas include, but are not limited to, fuel selection

and loading, heavy loads, welding, nondestructive examination (NDE), and canister drying and backfill. These requirements and the overall partial qualification process would be included in the revised IMC 2690, Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations and for 10 CFR Part 71 Transportation Packagings.

In addition to the partial qualification process, the cross-qualification program details the requirements for qualification to conduct the full spectrum of ISFSI inspections for reactor inspectors already qualified under IMC 1245, Appendix C1/C2. The additional requirements for conducting construction and pre-operational ISFSI inspections focus on those areas with most risk significance to those ISFSI activities and require specialized knowledge. These areas include, but are not limited to, health physics, concrete construction, and ISFSI pad design.

Inspections of any ISFSIs would be required to be performed by staff that have completed the ISFSI qualification program, which includes those partial qualified inspectors qualified under the cross-qualification program as discussed above. Given the frequency of ISFSI inspections being proposed as well as the current schedule for loading campaigns, this approach is not expected to create a challenge regarding completion of ISFSI inspections while resident inspectors become qualified in regions that elect to utilize the resident inspectors for inspection of routine loading campaigns.

Recommendation 2: Based on the above, the working group recommends that ISFSI inspectors be qualified using the formal qualification process in IMC 1246, and that this program be supplemented with the new cross-qualification program for IMC 1245, Appendix C1/C2 qualified inspectors.

C. ISFSI Inspection Program Level of Effort

In keeping with the working group's holistic approach to evaluate and risk-inform the program, the working group first identified all the risk significant ISFSI activities. Risk significant activities were identified by evaluating the impact of the activity on the five safety focus areas (risk significant areas): occupational exposure, public exposure, fuel damage, confinement/canister integrity and impact to plant operation. Once specific risk significant activities were identified, the working group revised the inspection procedures to provide inspection requirements and detailed inspection guidance to ensure adequate and consistent oversight of these items.

Specific examples of risk significant areas that were identified by the group include the control of heavy loads and fuel selection. These areas were identified by both their relative high risk from probabilistic risk assessment data and operational experience; and inspection requirements were added to ensure the appropriate focus on risk significant lifting activities and fuel selection activities.

To reduce unnecessary inspection effort while maintaining safety, the working group strived to minimize areas of inspection program overlap. Overlap was identified mostly for ISFSIs that are co-located with a reactor, because some aspects of the program are included in the inspection procedures for the reactor oversight or decommissioning inspection program. The programs identified with overlap include radiation protection, problem identification and resolution, fuel movement (within the spent fuel pool), security and safeguards, and emergency preparedness. The working group adjusted the scope of these program areas to appropriately focus on ISFSI-specific activities rather than larger programmatic adequacy.

Following revision of inspection requirements and guidance in the inspection procedures, the working group determined the amount of time, on average, to inspect each activity by performing a line by line review of each risk-informed inspection procedure. Operational experience including risk significant activity duration for an average site, subject matter expertise, and actual resource expenditure data were used to inform the working group's recommendations on the level of effort needed to adequately perform the risk significant inspection activities.

As discussed above, the working group decided on a risk-informed graded approach for ISFSI inspections and developed a risk prioritization tool to help the inspectors identify the most risk significant items to be inspected. A set of minimum inspection requirements to be performed during the loading campaign inspections was also identified. If the inspector concludes that licensee performance is satisfactory for a focus area, as prescribed in the inspection procedure, the inspection effort reviewing that focus area will be complete. If the inspector determines that licensee performance is unsatisfactory for a given focus area, as prescribed in the inspection procedure, the inspector should conduct a more thorough review of that aspect of the licensee's program to determine the reasons for the performance deficiencies. The increased inspection effort may include additional sampling of selected activities and documents.

Performance based review beyond the prescribed level of effort will require regional management approval and licensee notification. The level of effort described below does not include time expended for preparation, documentation, and escalated enforcement.

Based on the risk screening tool developed by the working group, operating experience over the last 30 years, an evaluation of overlaps in the program, and expert elicitation on the level of effort necessary to maintain safety and reasonable assurance of adequate protection, the working group recommends that the average level of effort for inspection of licensees performing initial or routine loading campaigns be 96 hours per site every triennial cycle. For monitoring-only operations at ISFSIs co-located at a reactor facility and for AFR ISFSIs, the working group recommends that the average level of effort be 24 hours per site and that the frequency for these inspections be extended from 2-3 years to a triennial cycle. For monitoring operations in-office, including follow-up on nonconforming licensee ISFSI activities between onsite inspections, all working group members agreed the average level of effort is 10 hours per site every triennial cycle, but is only performed as needed. While the working group recommended that the frequency of the AFR inspections be adjusted, they did not recommend a change in the scope or level of effort of the inspections. This is because the level of effort for AFRs was informed by the need to review programmatic areas, such as emergency preparedness, radiation protection, and quality assurance including corrective actions and audits, that are normally inspected by other inspection programs at sites co-located at a reactor facility. In addition, AFR ISFSI inspections include samples of emergency preparedness exercises to ensure the licensee maintains their response capability.

Historically, the regions expended approximately 30 percent more resources than allocated by the NRC memorandum dated February 20, 2002, to complete the suite of ISFSI IPs used for a new ISFSI. These IPs include reviews of preoperational testing, 10 CFR 72.212 evaluations, and the ISFSI storage pad. This information, along with operational experience and subject matter expertise, was used by the working group to risk-inform the recommended level of effort associated with the IPs. The working group recognized that the level of effort for each of these IPs could vary significantly for each reactor site based upon the combination of dry cask storage designs, the reactor site parameters, and the requirements for any modifications to the reactor facility to implement ISFSI operations. Based on this variability a line by line review of these IPs

to develop a standard level of effort would not be practical. For this reason, the working group utilized historical expenditure data and adjusted the level of effort for some procedures based on further risk informing inspection requirements to ensure appropriate focus on the most safety significant aspects as well as efficiency and consistency.

A general licensee is required under 10 CFR 72.212 to perform site specific evaluations to demonstrate that a dry cask storage system approved by a Certificate of Compliance is suitable for use at a 10 CFR Part 50 reactor site. Both 72.212 evaluation inspections and pre-operational testing inspections set the baseline for safe ISFSI operations and contain a large amount of risk significant reviews, as such, a greater level of effort was determined to be appropriate as indicated by historical data and was recommended. For 10 CFR 72.212 evaluation inspections, the working group recommends that the average level of effort be 160 hours for each new licensee and 120 hours for sites switching dry cask storage systems. For pre-operational testing inspections, the working group recommends that the average level of effort be 200 hours per inspection.

Both the pre-operational testing and 72.212 evaluation inspections included more and higher risk-significant activities to inspect as compared to the ISFSI storage pad inspection, therefore, a greater level of effort was determined to be appropriate and was recommended. Therefore, for inspections of the ISFSI storage pad, the working group recommends that the level of effort be maintained at 120 hours for each new licensee or sites switching dry cask storage systems.

Additionally, the working group recommends that the level of effort to review 10 CFR 72.48 evaluations be incorporated into the applicable complementary ISFSI inspection procedures and IP 60857 be used as a reference for ISFSI inspections. The level of effort for 72.48 evaluation reviews was incorporated into the IP level of effort recommendations above.

The current level of effort performed for ISFSI inspections is described in Section 3 below.

Recommendation 3: The level of effort for each IP should be adjusted as described above and in Section 3 below.

D. Funding for the ISFSI Inspection Program

Under the current Agency budget structure, the ISFSI inspection program is funded by the Operating Reactor business line and the Spent Fuel Storage and Transportation (SFST) business line. This structure is described in the above-mentioned memo, “Response to Regional Input on ISFSI Resources,” dated February 20, 2002. According to this memo the Operating Reactor business line would fund ISFSI inspections for pre-operational tests, operations, and partially for review of 72.212(b) evaluations (this regulation applies to ISFSI general licensees only) at operating reactor sites. In turn, the SFST business line would fund design, fabrication, on-site fabrication (vaults, pads, roads, etc.) and partially for review of 72.212(b) evaluations for initial inspections at new ISFSIs. For repeat loading campaign inspections, the Operating Reactor business line would solely fund operations and security inspections.

Currently, there are some challenges associated with having the ISFSI inspection program funded by two business lines. For example, it is a challenge to receive and discern the funding from the Operating Reactor business line for ISFSI inspections at the regional level as ISFSI inspection FTE are combined into the funding for several other operating reactor inspections. In addition, having the program funded through two business lines makes it more challenging to

coordinate the budget implications of program changes made by the SFST business line. It is also a challenge for inspection staff to charge time under two dockets, using two different inspection procedures.

Based on the above, the working group recommends that the current budget structure be updated to have the ISFSI inspection program solely funded by the SFST business line. It is the working group's understanding that this is a function of the NRC's internal budget structure, outside of the Agency's Fee Rules (10 CFR Part 170 and Part 171). As such, the working group recommends the removal of the ISFSI-related inspections performed under the IMC for Light - Water Reactor Inspection Program – Operations Phase, Appendix C, "Special and Infrequently Performed Inspections." Concurrent with this recommendation the working group recommends the deletion of IPs 60854.1, "Preoperational Testing of ISFSIs at Operating Plants," 60855.1, "Operation of an ISFSI at Operating Plants," and 60856.1, "Review of 10 CFR 72.212(b) Evaluations at Operating Plants," currently used as a tool to manage and budget the ISFSI inspection program by NRR. Only one IP should be used for each ISFSI-related activity and the budget and resources necessary for implementation of the ISFSI program activities should be managed entirely by the SFST business line.

Recommendation 4: Update the budget structure to have the ISFSI inspection program solely funded by the SFST business line.

E. Additional Areas for Consideration

During the assessment of the ISFSI inspection program, the working group recognized that other areas of the ISFSI program will be impacted by the recommendations documented in this memo and/or that other efficiencies could be gained from an assessment of these other areas. However, the working group intentionally limited the scope to provide a high-quality deliverable and focus on the areas previously identified by the NRC staff, the OIG, and external stakeholders.

The working group recommends a future review to evaluate potential enhancements in the areas of inspection readiness for transportation of spent nuclear fuel, and inspection guidance and inspection resources for Consolidated Interim Storage Facilities (CISFs). While not evaluated by the working group, efficiency gains related to the creation of a Center of Expertise (COE) for ISFSI inspection activities may be possible and should be evaluated during a follow up review of the program.

Another area for consideration is the development of a routine assessment of the ISFSI inspection program. The goal of this assessment activity should be to evaluate changes to the ISFSI inspection program; ensure consistency of the implementation of the program across all regions; recognize when an issue has generic implications and triggers the appropriate generic process for resolution; and assess any Agency metrics for the ISFSI inspection program. The assessment should also routinely evaluate whether increased efficiencies and effectiveness can be gained, including whether there are opportunities to increase agency agility by efficiently leveraging staff skill sets across organization boundaries to meet agency needs.

Recommendation 5: Initiate follow-on effort to assess and provide recommendations for enhancement in the areas of inspection readiness for transportation of spent nuclear fuel, and to develop inspection guidance and inspection resources for CISFs. The working group also recommends a follow-on effort to develop a routine assessment of the ISFSI inspection program

to evaluate changes to the oversight program and explore further enhancements, inspector agility, and efficiencies.

Section 3. Estimate for Inspection Level of Effort

Recurring inspections

A summary of the current and proposed level of effort for each inspection procedure is listed below.

Procedure	Current level of effort per site as applicable[1]	Proposed[1,2]	Total FTE delta [3,4,5] Proposed
60855, Operation of an ISFSI	120	96 + 10 in-office hours as needed	1.07
60857, Review of 10 CFR 72.48 Evaluations	12	0	0.3
60858, Away-From-Reactor ISFSI Inspection Guidance	24	24	0.02
Total	N/A	N/A	1.39

[1] The level of effort is the total inspection hours per the applicable inspection frequency. The current frequency is every two years, not to exceed three years, and the proposed frequency is on a triennial cycle.
[2] When a site, typically after permanent cessation of operations, performs a continuous loading campaign with the intent of offloading the spent fuel pool, the inspection frequency is quarterly. As these campaigns occur at an irregular frequency they are not reflected in the table, however are expected to be a small increase in inspection effort.
[3] The total FTE delta is on an annual basis.
[4] As of January 31, 2020, there are 65 sites co-located at reactor facilities and 9 AFR sites. As more commercial power reactors transition to decommissioning over the next few years, fuel will be completely transferred to the ISFSI and the inspection resources needed to complete the program will decrease. All but two operating reactors have an existing ISFSI. Inspection resources to perform construction, preoperational testing, and initial loading inspections are expected to taper in the future.
[5] 1 FTE = 1500 hours

New ISFSI Construction Activities

The total FTE to support new ISFSI design, construction, preoperational testing, and initial loading oversight is expected to continue to decline as nearly all operating reactor licensees have an operational ISFSI. New construction inspection activities are also performed if a licensee chooses to change to a different dry cask storage system and/or if a licensee expands the size of an existing ISFSI.

Procedure	Current Hours	Actual Estimate (+30%)	Proposed Hours
60853, On-Site Fabrication of Components and Construction of an ISFSI	120	160	120
60854, Preoperational Testing of an ISFSI	120	160	200
60856, Review of 10 CFR 72.212(b) Evaluations	120	160	160
60857, Review of 10 CFR 72.48 Evaluations	60	0	0
Total	420	480	480
FTE Total for construction and initial loading activities	0.28	0.32	0.32

Section 4. Recommendation Summary

Recommendation 1: The inspection frequency for routine loading campaigns and monitoring operations at ISFSIs should be extended from every two years, not to exceed three years, to a triennial frequency. The working group also recommends that the inspection frequency for extended loading campaigns be quarterly.

Recommendation 2: ISFSI inspectors should be qualified using the formal qualification process in IMC 1246 and supplemented with the new cross-qualification program for IMC 1245, Appendix C1/C2 qualified inspectors.

Recommendation 3: The level of effort for each IP should to be adjusted as outlined in Section 3.

Recommendation 4: Update the budget structure to have the ISFSI inspection program solely funded by the SFST business line.

Recommendation 5: Initiate follow-on effort to assess and provide recommendations for enhancement in the areas of inspection readiness for transportation of spent nuclear fuel, and to develop inspection guidance and inspection resources for CISFs. The working group also recommends a follow-on effort to develop a routine assessment of the ISFSI inspection program to evaluate changes to the oversight program and explore further enhancements, inspector agility, and efficiencies.