



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

October 2, 2019

MEMORANDUM TO: Michael C. Layton, Director
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

FROM: 2019 INDEPENDENT SPENT FUEL STORAGE INSTALLATION
INSPECTION PROGRAM ENHANCEMENT TEAM

SUBJECT: RESULTS OF THE ASSESSMENT OF THE INDEPENDENT
SPENT FUEL STORAGE INSTALLATION INSPECTION
PROGRAM

This memorandum provides the Independent Spent Fuel Storage Installation (ISFSI) Inspection Program Enhancement Team's assessment and recommendations for an efficient risk-informed performance-based ISFSI inspection program. The initiative is responsive to NRC headquarters and regional offices desire to improve the program, as well as feedback received from industry in the attached Nuclear Energy Institute (NEI) letter dated September 19, 2018 (Agencywide Documents Access Management System (ADAMS) Accession Package No. ML 18292A594), and comments received from members of the public during our monthly participation in the Office of Nuclear Reactor Regulation (NRR) Reactor Oversight Process public meetings.

The team completed their work per the direction of the Division of Spent Fuel Management Division Director, as described in the attached team charter dated June 4, 2019 (ADAMS Accession No. ML19155A273). The team included representation from each regional office, the Office of Nuclear Material Safety and Safeguards (NMSS) and NRR. Additionally, the team consulted with knowledgeable staff from the Office of Research (RES), as needed, to fully inform the team's highly collaborative decision-making efforts. The enclosed recommendations, options and draft technical basis for the proposed ISFSI inspection program reflect our assessment and the enhancements that can be made to: risk inform the ISFSI inspection program activities, identify necessary inspection resources, and establish training requirements for ISFSI inspectors.

In preparing these recommendations, the team transformed the inspection program by informing the recommendations with probabilistic risk analyses, byproduct material radiation exposure studies, subject matter expertise, operating experience, and lessons learned from the last 30 years of ISFSI inspection history. The team significantly revised the inspection procedures to clarify requirements, level of effort, and inspector guidance based on the team's assessment.

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In addition, the team drafted a completely new document, which serves as the technical basis for the ISFSI inspection program. The team evaluated the inspections performed from on-site construction of an ISFSI pad, to pre-operational testing, to loading campaigns, and eventual long-term monitoring of spent fuel in dry storage. The areas of security, transportation, vendor inspections and aging management as they relate to ISFSIs were not reviewed in the team's assessment.

The team reached a unanimous consensus on the vast majority of recommendation decisions and the enclosed draft inspection program documents. This includes the five safety focus areas for inspection, inclusion of performance-based criteria for additional inspection activity, and the inspection program requirements. The team's representatives from headquarters and all but one regional office reached consensus on the resource estimates to perform the minimum required inspection activities and the qualification requirements for staff. The difference in viewpoints regarding resources and qualifications involved the types and levels of risk associated with ISFSI activities.

Enclosures 5, 6 and 7 contain drafts of documents for the proposed ISFSI inspection program. The draft documents reflect the team's majority view regarding each option. If a different option is selected by the senior management team, the corresponding sections of the draft inspection program documents will need to be modified. The team decided to draft the documents in this manner to leverage the expertise of the existing enhancement team and to expedite the next steps in the review process (regional review, external stakeholder input, socializing the new program, and issuance of revised program documents).

The team's recommendations will result in the staff performing an appropriate level of oversight with less regulatory burden and expenditure of resources by focusing oversight on issues of greater risk importance. The current expenditure of resources for the ISFSI inspection program is described in NRC document, "Response to Regional Input on ISFSI Resources," dated February 20, 2002, and the "Inspection Resources" section in the inspection procedures. Per this guidance, the resources to perform a repeat loading campaign inspection is 132 hours of direct inspection activities, including 10 CFR 72.48 evaluations, every two years or 66 hours per year. As part of the team's efforts to risk-inform the program the resources needed to perform a repeat loading campaign inspection will decrease to 106 hours every three years or 35 hours per year. The resources for the routine away from reactor ISFSI inspection is currently 24 hours every two years or 12 hours per year. The enhancement team is proposing the resources be reduced to 24 hours every three years or 8 hours per year. The reduction, in Full Time Equivalents (FTE) (1FTE = 1500 hours), for direct inspection of recurring activities at the ISFSIs is 1.4 FTE per year (Current 2.94 FTE - Proposed 1.56 FTE). Similarly, by using a risk-informed approach to assess the other as-needed inspection activities performed at an ISFSI, i.e., onsite construction, pre-operational tests, and biennial review of 10 CFR 72.48 evaluations; the proposed inspection program will see a reduction in expenditure across all areas of inspection. Additionally, the hours for preparation and documentation will also reduce as the hours for direct inspection are lowered.

The ultimate product of this enhancement effort is a reliable, risk-informed, comprehensive, and consistent approach to ISFSI inspections across the NRC's regional offices. Successful implementation of the team's recommendations across all NRC regions will support the NRC's vision of becoming a modern, risk-informed regulator by embracing improvements in our decision-making, graded approach to safety and qualification of the agency ISFSI inspectors.

Thank you for your consideration of these recommendations. Please advise if you need additional information or assistance.

ENCLOSURES:

- Enclosure 1 NEI Letter dated September 19, 2018
- Enclosure 2 ISFSI Inspection Program Enhancement Working Guidance
- Enclosure 3 Recommendations for Enhancement of the ISFSI Inspection Program
- Enclosure 4 Region II Independent Spent Fuel Storage Installation Inspection Program Position Paper
- Enclosure 5 Draft Inspector Manual Chapter XXXX, "ISFSI Inspection Program Technical Basis"
- Enclosure 6 Draft Inspector Manual Chapter 2690, "Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations and for 10 CFR Part 71 Transportation Packagings"
- Enclosure 7 Draft Inspection Procedures:
 - 60853, "On Site Fabrication of Components and Construction of an ISFSI"
 - 60854, "Preoperational Testing of an ISFSI"
 - 60855, "Operation of an ISFSI"
 - 60856, "Review of 10 CFR 72.212(b) Evaluations"
 - 60857, "Review of 10 CFR 72.48 Evaluations"
 - 60858, "Away-From-Reactor ISFSI Inspection Guidance"

RESULTS OF THE ASSESSMENT OF THE INDEPENDENT SPENT FUEL STORAGE
INSTALLATION INSPECTION PROGRAM, DOCUMENT DATE:**DISTRIBUTION:**

TPruett, Region IV
KWarner, Region I
RCarrion, Region II
TMorrissey, Region II
MLearn, Region III
CSmith, Region IV
LBrookhart, Region IV
Croque-Cruz, NRR/DIRS
AAgrawal, NRR/DIRS

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ADAMS Package Accession Number: ML19277G875

OFFICE:	Region I/ DNMS	Region II/ DRS	Region II/ DRP	Region III/ DNMS	Region IV/ DNMS	Region IV/ DNMS
NAME:	KWarner	RCarrion	TMorrissey	MLearn	CSmith	LBrookhart
DATE:	9/30 /19	9/ 30/19	9/ 30 /19	9/ 30 /19	10/ 1 /19	10/ 1 /19
OFFICE:	NRR/DIRS	NMSS/IOB	Region IV			
NAME:	AAgrawal	CRoque- Cruz	TPruett			
DATE:	9/ 30/19	9/ 25/19	10/ 2 /19			

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