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MEMORANDUM TO: Andrea Kock, Director
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

FROM: Leira Cuadrado, Chief **/RA/**
Inspection and Oversight Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Leira Y. Cuadrado-Caraballo

Digitally signed by Leira Y. Cuadrado-Caraballo
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SUBJECT: IMPLEMENTATION OF ENHANCEMENT EFFORTS TO THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION INSPECTION PROGRAM

By letter dated March 19, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20079E064), the Director of the Division of Fuel Management (DFM) of the Office of Nuclear Material Safety and Safeguards (NMSS) endorsed recommendations to implement risk-informed enhancements to the independent spent fuel storage installation (ISFSI) inspection program (ADAMS Accession No. ML20078P093).

With the execution of the ISFSI Implementation Plan (ADAMS Accession No. ML20189A031), the staff has achieved the objective of implementing the working group recommendations to enhance the ISFSI inspection manual chapters (IMCs) and inspection procedures (IPs).

This memorandum documents the implementation of the enhancement efforts, as well as remaining actions for early calendar year 2021.

CONTACT: Jeremy Tapp, NMSS/DFM/IOB
301-415-8047

Enclosure:
ISFSI: Implementation of
Enhancement Efforts

SUBJECT: IMPLEMENTATION OF ENHANCEMENT EFFORTS TO THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION INSPECTION PROGRAM
Dated: February 9, 2021

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ADAMS Accession Nos: ML21006A040 ***via email**

OFFICE	DFM/IOB	DFM/LA	DFM/IOB	DFM/IOB
NAME	AWu*	SFigueroa*	LCuadrado*	JTapp
DATE	1/5/2021	1/6/2021	2/5/2021	2/9/2021

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Independent Spent Fuel Storage Installation Inspection Program:
Implementation of Enhancement Efforts

Background and Objective:

On June 4, 2019, a working group was formed as part of the Independent Spent Fuel Storage Installation (ISFSI) Inspection Program Enhancements Initiative to evaluate and enhance the U.S. Nuclear Regulatory Commission's (NRC) existing ISFSI inspection program by developing a clearer, more risk-informed, comprehensive, and consistent approach to ISFSI inspections across the four NRC regional offices that focuses on areas most important to safety (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19155A273).

The primary objective of the working group was to improve the effectiveness, efficiency, and consistency of ISFSI inspections, as well as the budget, planning, and tracking mechanisms used by the agency. To do so, the staff leveraged best practices of the existing program, while evaluating stakeholder recommendations on how to enhance and improve the NRC's oversight of ISFSIs. The working group used 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 to inform the recommended enhancements to the program.

Recommendations:

As summarized in a letter dated March 18, 2020 (ADAMS Accession No. ML20078P093), the working group recommended a more risk-informed inspection program consisting of five safety focus areas (risk-significant areas) in the oversight program and includes:

1) A triennial inspection frequency for routine inspections,
2) Use of the current qualification requirements or application of a "partial qualified" concept as part of the new cross-qualification program,
3) A revised level of effort estimate and a refocusing on the more risk-significant ISFSI activities for each applicable inspection procedure, and
4) ISFSI inspection program to be funded solely by the Spent Fuel Storage and Transportation (SFST) business line.

The working group stated that implementation of the recommendations would result in a reliable, more risk-informed, comprehensive, and consistent approach to ISFSI inspections across the NRC's regional offices. The enhanced program would allow the NRC to maintain its mission while supporting the agency's ongoing vision of becoming a modern, risk-informed regulator by embracing improvements in decision-making and a graded approach to safety.

Approval of Recommendations and Staff Plan for Implementation:

By letter dated March 19, 2020 (ADAMS Accession No. ML20079E064), the Director of the Division of Fuel Management (DFM) of the Office of Nuclear Material Safety and Safeguards (NMSS) endorsed the working group's recommendations to implement risk-informed enhancements to the ISFSI inspection program, with completion of the enhancement activities

expected by the end of calendar year 2020, and full implementation of the new ISFSI inspection program starting in calendar year 2021.

On July 16, 2020 (ADAMS Accession No. ML20189A031), the staff developed an implementation plan, with the objective to implement the working group recommendations to enhance the ISFSI's inspection manual chapters (IMCs) and inspection procedures (IPs). Specifically, the staff aimed to implement the following recommendations:

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 recommended that the inspection frequency for extended loading campaigns be quarterly.
2) ISFSI inspectors should continue to 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 if applicable.
3) The level of effort for each IP should to be adjusted as outlined in the working group's final recommendations report Section 3.

Recommendation #4, the funding of ISFSI inspections by the SFST business line, was not included in the implementation plan as it was already completed at the time of plan development. One additional recommendation, Recommendation #5, regarding future efforts to assess and provide recommendation for enhancements in areas not covered by this effort, was not undertaken by the implementation working group as there had not been specific areas identified to be further assessed at the time the inspection procedures were being revised.

Implementation of Recommendations:

To date, the staff has completed all IP and IMC revisions required of the ISFSI inspection program enhancement effort. The following procedures have been issued for use, with an effective date of January 1, 2021:

IP/IMC	Title
IP 60853	OnSite Fabrication of Components and Construction of an ISFSI
IP 60854	Preoperational Testing of an ISFSI
IP 60855	Operation of an ISFSI
IP 60856	Review of 10 CFR 72.212(b) Evaluations
IP 60857	Review of 10 CFR 72.48 Evaluations
IP 60858	Away-From-Reactor ISFSI Inspection Guidance
IMC 2690	Inspection Program for Storage of Spent Reactor Fuel and Reactor-Related Greater-Than-Class C Waste at Independent Spent Fuel Storage Installations and for 10 CFR Part 71 Transportation Packagings
IMC 2691	Technical Basis for the Independent Spent Fuel Storage Installation Inspection Program

Additionally, two training sessions were conducted to familiarize inspection staff with the revisions to the IPs and IMCs, and to ensure common understanding of any new content. The first training session was recorded for future use and made available to the staff as a reference. As of December 31, 2020, the status of the working group recommendations is as follows:

	Recommendation	Status as of December 2020	Additional Actions Required
1	A triennial inspection frequency for routine inspections	Completed in IMC 2690	Not Applicable
2	Inspections performed by qualified inspectors using current qualification requirements for ISFSI inspectors or application of a partial qualification option for inspectors that may complete specific aspects of ISFSI inspections	Completed in IMC 2690	Not Applicable
3	A revised level of effort for each applicable inspection procedure	Completed in all IPs	Not Applicable
4	ISFSI inspections funded solely by the SFST business line	Completed for Fiscal Year (FY) 2022 The Office of Nuclear Reactor Regulation (NRR) transferred their funding portion for ISFSI efforts for FY2022 and beyond to NMSS. Revised IMC 2690 to remove the references to IPs 60854.1, 60855.1, 60856.1. NRR revised IMC 2515, Appendix C to remove the references to IPs 60854.1, 60855.1, 60856.1.	NRR will retire the following IPs in Quarter 1 of calendar year (CY) 2021, after applicable inspection reports have been issued: IPs 60854.1, 60855.1, 60856.1.
5	Follow-on efforts to assess and provide recommendation for enhancement in areas not covered by this effort: a. Inspection readiness for transportation of spent nuclear fuel	These follow-on efforts were outside the scope of staff's implementation effort in CY 2020.	Assessment of additional areas are planned as follows: a. An effort is currently ongoing by a separate working group. Staff will

			evaluate the results and findings of this effort and determine if enhancements to inspection guidance are necessary.
	b. Develop inspection guidance and resources for Consolidated Interim Storage Facilities (CISFs)		b. Staff will be evaluating the necessary oversight framework for CISFs in CY 2021.
	c. Creation of an ISFSI Center of Expertise (COE)		c. The staff will monitor the implementation of the enhanced program that just became effective in January 2021 and evaluate the need for a COE before the end of FY 2022.
	d. Develop self-assessment process for the ISFSI inspection program		d. The staff will monitor the implementation of the enhanced program that just became effective in January 2021 and evaluate the need for a self-assessment process before the end of FY 2022.