



# **Guidance Development for a Storage-Transportation-Storage Interface**

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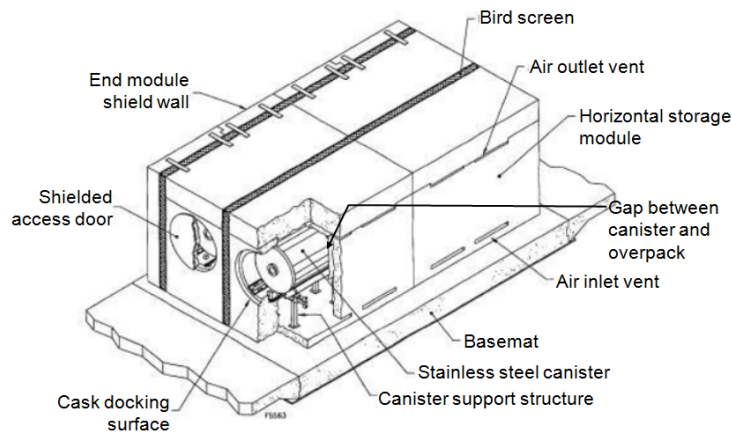
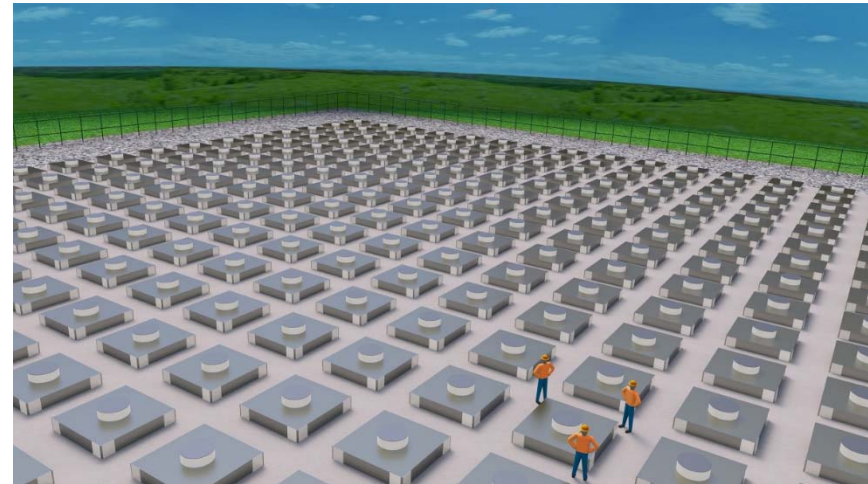
# Background

- NRC has received 2 license applications for Consolidated Interim Storage Facilities (CISFs)
- CISF applications include spent fuel currently in storage canisters at existing independent spent fuel storage installations (ISFSIs) licensed under 10 CFR Part 72
- These canisters are proposed to be transported under 10 CFR Part 71, and subsequently placed into storage at the CISF under Part 72 (72-71-72)

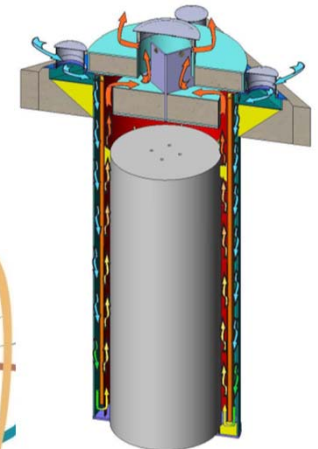
# Consolidated Interim Storage Facilities



WCS, Andrews County Texas



Holtec Intl. HI-STORE, Eddy-Lea Counties, NM



# NRC Review Guidance

- Additional guidance necessary for the review of a 72-71-72 interface in Part 72 applications
  - Consider the activities involved during initial storage, transportation and subsequent storage
  - Applicable regulatory requirements
  - Important system variations
  - Testing and nondestructive examination (NDE) to demonstrate an adequate margin of safety
  - Allowable credit for examinations or tests
    - Such as examinations required by an aging management program (AMP)



# Testing and Nondestructive Evaluation Methods

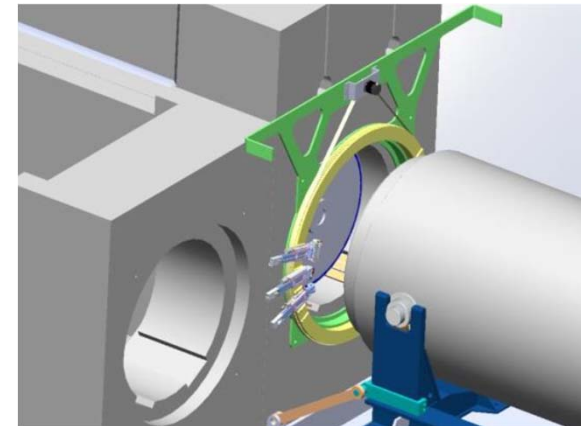
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- Canister helium leak rate test
  - Conducted inside the transportation package
  - Verify no canister breaches prior to and/or after transportation
- Visual Examination
  - Performed using remote methods while canister is in a storage or during transfer operations
  - Detection of aging effects and handling defects
- Surface/Volumetric NDE
  - Performed using remote methods while canister is in storage or during transfer operations
  - Eddy current and ultrasonic testing are potential methods
  - Characterize aging and handling effects

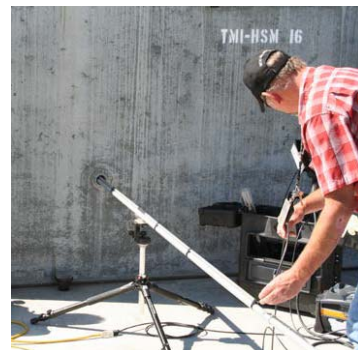


# Testing and Nondestructive Evaluation Methods

- Leakage Testing ANSI N14.5 Radioactive Materials - Leakage Tests on Packages for Shipment
- Visual Examination
  - Fiber optic system
  - Inspection robot/crawler
- Surface/Volumetric examination
  - Inspection robot/crawler
  - Inspection ring systems



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2018 INMM





# Scenario Variations

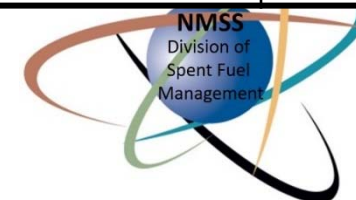
- Dual purpose storage and transportation canister based systems in CISF applications
- Systems designed only for storage
- Part 72
  - Initial license/Certificate of Compliance (CoC) period
  - Period of Extended Operation (PEO) with AMPs
- Part 71
  - No credit for canister boundary integrity
  - Credit for canister boundary integrity



# Example #1

## Initial CoC/License with no credit for canister boundary integrity for Part 71

Part 72	Part 71	Part 72	
Initial Storage	Pre-transport	CISF Receipt	CISF Storage
In accordance with the ISFSI License or CoC, Technical Specifications and License/CoC Conditions	No canister leak test unless CISF receipt testing results do not meet acceptance criteria	100% canister leak test	In accordance with the initial CISF License, Technical Specifications, and License Conditions
	No visual examination unless initial CISF receipt visual examination results do not meet acceptance criteria	Visual examination - minimum of 2 from each originating site (most susceptible)	
	No surface/volumetric NDE unless visual examination results do not meet acceptance criteria	No surface/volumetric NDE unless visual examination results do not meet acceptance criteria.	

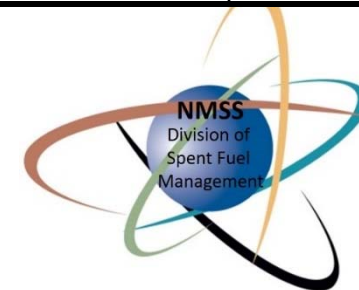




# Example #2

## Initial CoC/License with credit for canister boundary integrity for Part 71

Part 72	Part 71	Part 72	Part 72
Initial Storage	Pre-transport	CISF Receipt	CISF Storage
In accordance with the ISFSI License or CoC, Technical Specifications and License/CoC Conditions	100% Canister leak test	100% Canister leak test	In accordance with the initial CISF License, Technical Specifications, and License Conditions
	Visual examination - minimum of 2 from each originating site (most susceptible).	No visual examination	
	No surface/volumetric NDE unless visual examination results do not meet acceptance criteria	No surface/volumetric NDE	



# Example #3

## PEO with no credit for canister boundary integrity for Part 71

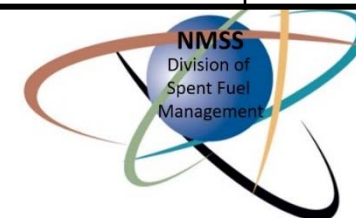
Part 72	Part 71	Part 72	Part 72
Initial Storage	Pre-transport	CISF Receipt	CISF Storage
In accordance with renewed ISFSI License or CoC, Technical Specifications, License/CoC Conditions and AMP(s)	No canister leak test unless CISF receipt testing results do not meet acceptance criteria	100% Canister leak test	In accordance with the initial CISF License, Technical Specifications, License Conditions and AMP(s) for SSCs in the PEO
	No visual examination unless initial CISF receipt visual examination results do not meet acceptance criteria	Visual examination - minimum of 2 from each originating site (most susceptible). Credit for AMP examinations permitted	
	No surface/volumetric NDE unless visual examination results do not meet acceptance criteria	No surface/volumetric NDE unless visual examination results do not meet acceptance criteria	



# Example #4

## PEO with credit for canister boundary integrity for Part 71

Part 72	Part 71	Part 72	Part 72
Initial Storage	Pre-transport	CISF Receipt	CISF Storage
In accordance with renewed ISFSI License or CoC, Technical Specifications, License/CoC Conditions and AMP(s)	100% Canister leak test	100% Canister leak test	In accordance with the initial CISF License, Technical Specifications, License Conditions and AMP(s) for SSCs in the PEO
	Visual examination - minimum of 2 from each originating site (most susceptible). Credit for AMP examinations permitted.	No visual examination	
	No surface/volumetric NDE unless visual examination results do not meet acceptance criteria	No surface/volumetric NDE	



# Contingency Planning

- The number of canisters that are found to have indications of aging are anticipated to be limited
- An acceptable plan for addressing canisters with aging effects is expected to be provided in the CISF application
  - Procedures and controls to limit occupational exposures and site boundary dose limits
  - Corrective actions necessary to return to normal operations
  - Necessary to meet the requirements of 10 CFR 72.24(c)(3), 72.24(d), 72.24(e), 72.104 and 72.106



# Path Forward

- Collect input from industry and the public at meetings and conferences – Summer 2018
- Incorporate draft guidance into the Storage Standard Review Plan (SRP) – Fall 2018
- Issue revised SRP for public comment – Spring 2019
- Address public comments and issue revised guidance – Summer 2019



# Acronyms

- AMP: Aging Management Program
- CISF: Consolidated Interim Storage Facilities
- CoC: Certificate of Compliance
- ISFSI: Independent Spent Fuel Storage Installation
- NDE: Nondestructive examination
- SSC: Structure, System or Component
- PEO: Period of Extended Operation
- SRP: Standard Review Plan

