



# Guidance Development for a Storage-Transportation-Storage Interface

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2017 REG-CON

# Background

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



# NRC Review Guidance

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- Additional guidance necessary for the review of a 72-71-72 interface in Part 72 applications
  - Activities involved during initial storage, transportation and subsequent storage
  - Important variations
  - Applicable regulatory requirements
  - Possible testing and nondestructive examination (NDE) methods to demonstrate an adequate margin of safety
  - Potential relationships such as situations where credit for examinations or tests may be allowable



# Scenario Variations Considered

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- Limited to dual purpose storage and transportation canister based systems
- Part 72
  - Initial license/Certificate of Compliance (CoC) period
  - Period of Extended Operation (PEO) with Aging Management Programs (AMPs)
- Part 71
  - No credit for canister boundary integrity
  - Credit for canister boundary integrity



# Testing and Nondestructive Evaluation Methods

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



# Example #1

## Initial CoC/License 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 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	
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 do not meet the acceptance criteria are anticipated to be limited
- An acceptable plan for addressing non compliant canisters 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

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- Collect feedback
- Develop draft guidance
- Incorporate into future revisions of staff guidance such as the Storage Standard Review Plan (SRP) and/or Transportation SRP



# Acronyms

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- 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

