



In Pursuit of Storage & Transport Life Cycle Balance

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NAC Corporate Overview Proven Nuclear System and Service Solutions



Independent Subsidiary
Hitachi Zosen USA



45 Years in Nuclear
Fuel Cycle Consulting



Three Decades with
Numerous Cask Technologies
Licensed

30 Yrs. of Commercial &
Government
SF Transportation

More than 420 Storage
and Transport
Systems Delivered

Pioneers in Dry Storage
Ultra-High Capacity Systems

Key Highlights

- Greater than 75% commercial decommissioning site dry storage footprint
- Pioneers in HLW, GTCC and Fuel Storage Integration into MPC dry storage technology
- Pioneers in Transport System Integration (STC-HLW, NAC-LWT 60 Revs.)

Slide 2

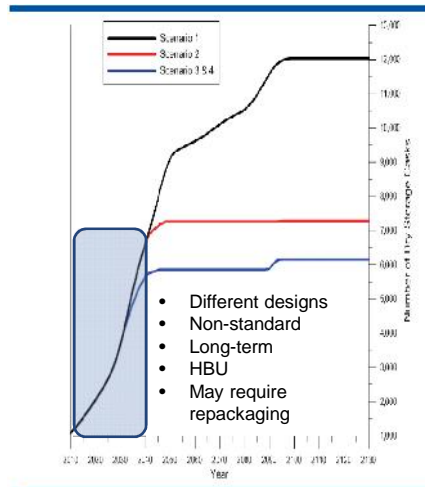
“A man that holds a cat by the tail will learn something that he can't experience in any other way”
 Mark Twain

Perspective Based on Unique on U.S. Spent Fuel Storage and Transport Experience

Slide 3

U.S. Spent Fuel Management: Govt. Liabilities
 About \$550M/yr Now increasing to \$700M/yr by 2020

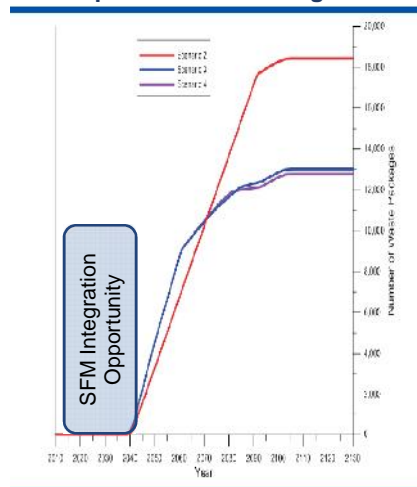
Onsite Dry Storage Casks



- Different designs
- Non-standard
- Long-term
- HBU
- May require repackaging

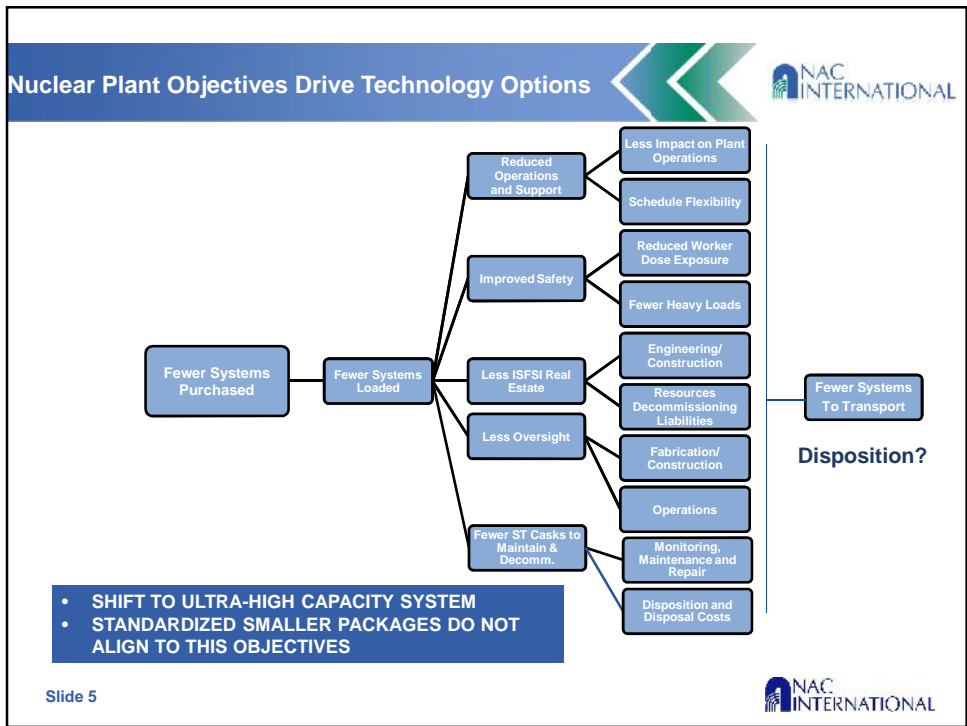
Source: NWTRB

Disposal Waste Packages

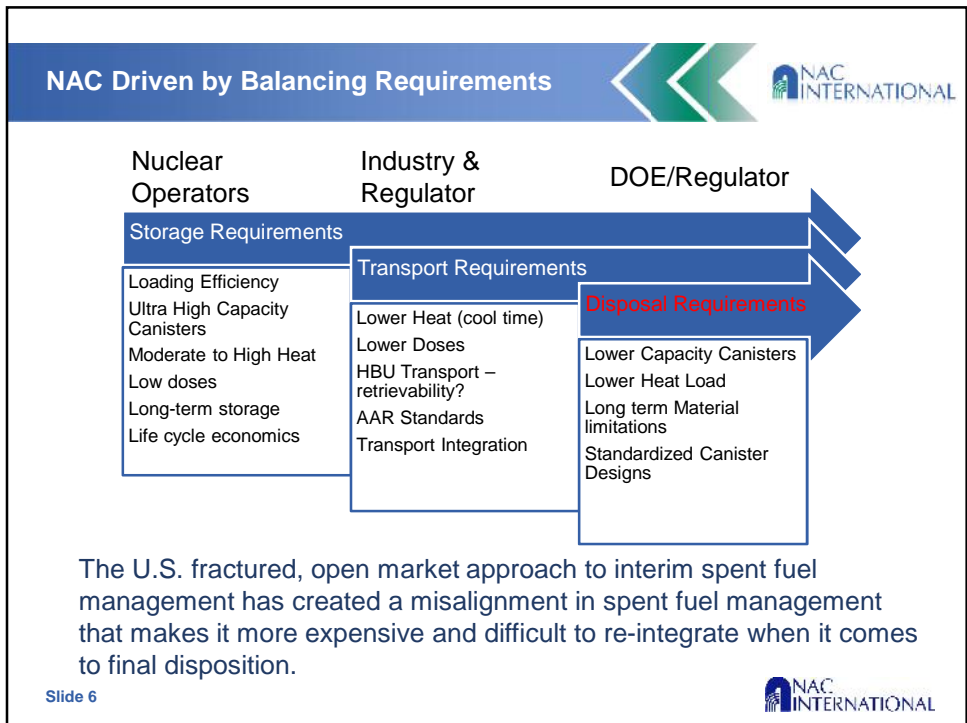


SFM Integration Opportunity

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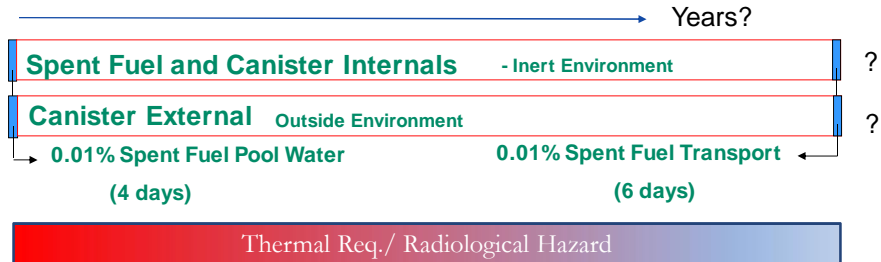


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Slide 6

The Life Cycle of a Dry Storage System



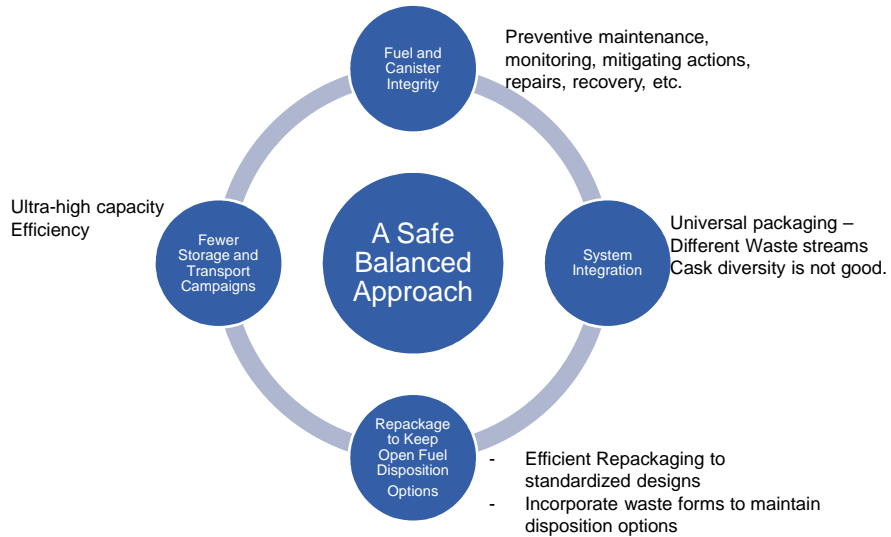
Technology and Materials

- Objective to Optimize Performance, Canister and Cask Materials for Each Phase of the Cask Life Cycle

Life Cycle Considerations

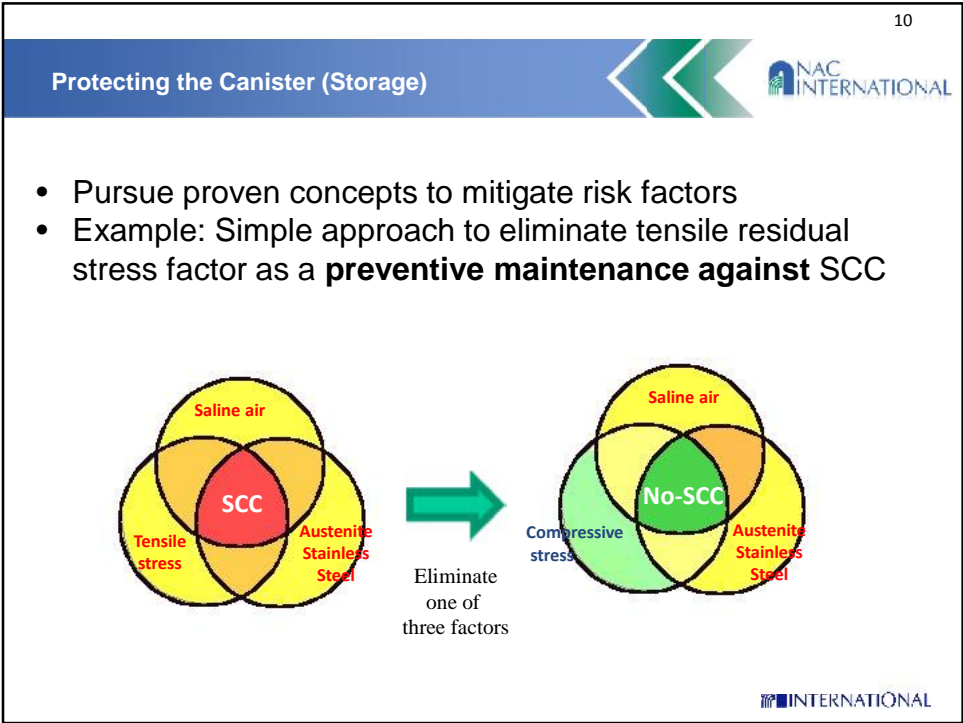
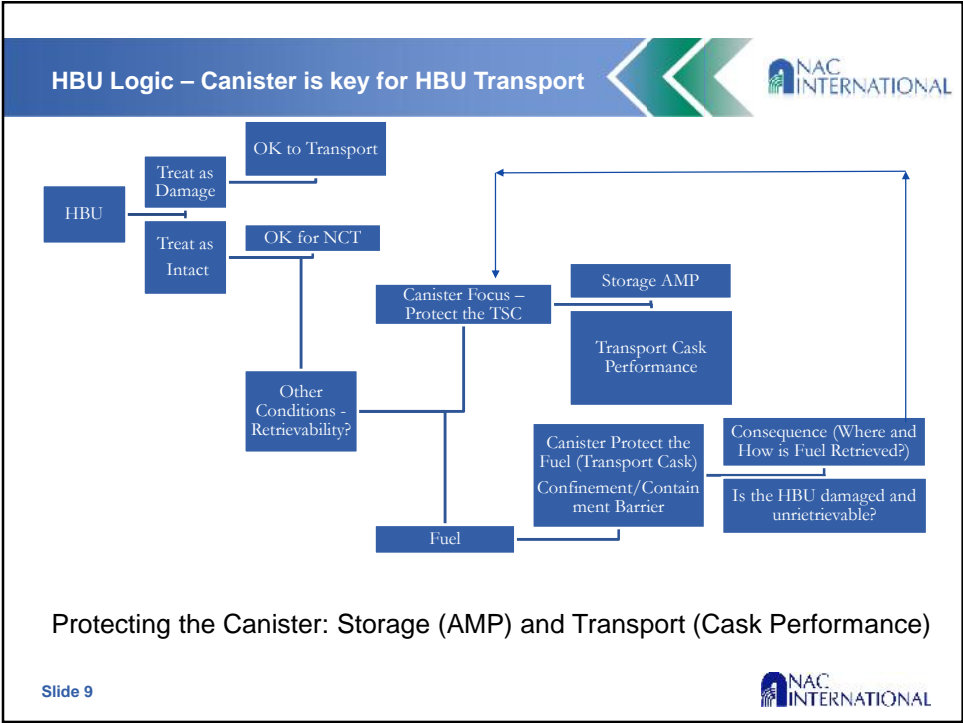
- Common sense -> Risk informed factors
- Availability of simple, proven technology and methods for preventative maintenance and to address degradation and recovery
- System integration to minimize impact to overall spent fuel management value chain

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Slide 8





Protecting the Canister (Transport)

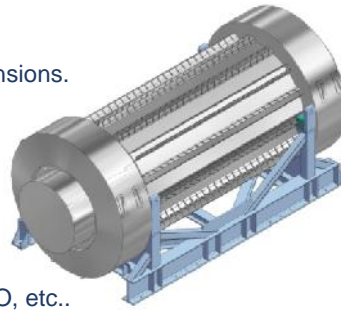


- **The MAGNASTOR Transportation (10 CFR 71) submittal (MAGNATRAN)**

- Submittal of RAI Responses in December 2014
- Designed for MAGNASTOR Canister
- Intended to Envelop All-NAC Canisters Dimensions.

- **MAGNATRAN Objectives**

- Achieve Industry Lowest G-loads
- Integration of other waste forms
- Evaluate the transport cask of the future
 - Transport Integration Strategy: FIFO, LIFO, etc..



KEY ATTRIBUTE: AT MINIMUM DESIGNED SO THAT DIMENSIONS AND TECHNICAL PARAMETERS CAN ENVELOP ALL NAC CANISTERS

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Balanced Approach = Technology Integration



Incentivize Migration to Higher Capacity or More Efficient Systems

- Reduce the number of current system designs loaded
- Lower costs of dry storage by at least 20%
- Reduce the number of systems to be transported and repackaged
- Reduce the size of a storage site

**MAGNASTOR
Systems Loaded: 70**

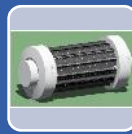


Pursue True Multi-purpose System Configurations

- Transport ready storage
- Retains disposal and reprocessing options
- SF and HLW Integration
- Addresses issues related to fuel and canister performance



**DOE West Valley
Systems Needed: 55**



Universal Transport Cask and Infrastructure

- 13 dry storage canister designs each with its own transport cask
- Significant benefits; equipment, training, crews, facilities, etc.
- Opportunity to include other DOE waste packages

**MAGNATRAN
Under NRC Review**

Few Last Comments



- NAC is an active participant supporting the EPRI ESCP - Collaboration offering candid feedback on some program activities and transfer of sister rods to Idaho.
- Good things have been done under existing authority to advance SF Management in the right direction – We hope DOE continue these evaluations that offer some guidance to navigate some uncertainty.
- Pursue a balanced approach in spent fuel management considering the life cycle risk factors of SF and apply risk informed concepts
- Industry must continue to evaluate options that are consistent with an open disposition strategy – i.e. those actions that don't inhibit disposition choices. Ex. System integration, other alternatives.
- NRC Guidance is essential for progress.

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 **MAGNASTOR**