

# Demystifying Spent Fuel Transport Readiness

Juan C. Subiry

Vice President, Market and  
Product Strategy

January 30, 2020

INMM / Washington, DC



The Skills and Experience to Deliver Nuclear Excellence

# NAC UNF Transportation Overview

- First NAC spent fuel transport shipment was in 1973
- Four decades of cask system design, licensing and deployments
- Operates fleet of 8 NAC-LWTs and 1 OPTIMUS system
- Lead spent fuel transport provider for PIE projects
- Transport CoC validations in more than 50 countries
- Lead contractor for DOE's FRR program for first 16 years
- NAC-STC transport cask fleet (10 casks) supplied to 2 international customers
- Routinely and actively transporting UNF on U.S. soil

**38 Shipments completed in 2019**



Although most of NAC's shipments have been by road, some shipments have required Intermodal transport.

# Defining Private Transportation Readiness

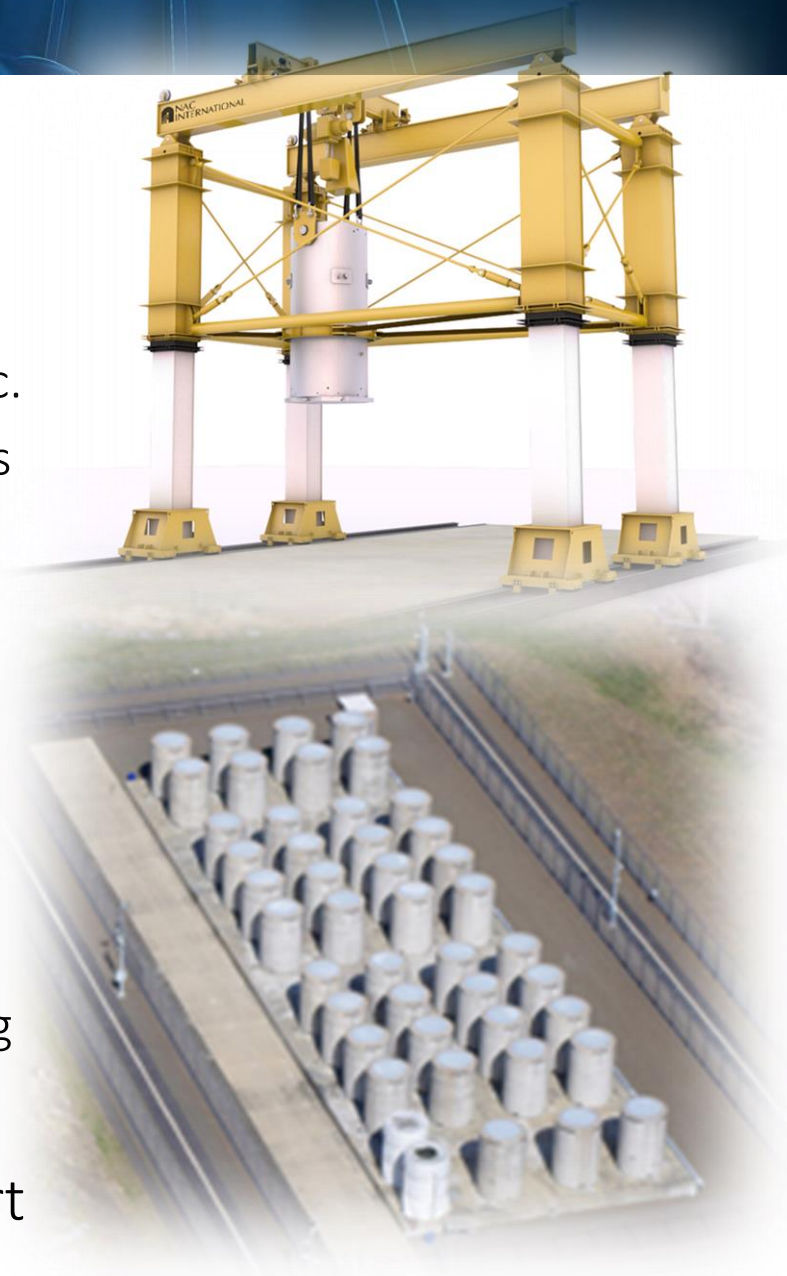


- Point A – Site operating under 10CFR50/72
- Cask Loading – Transfer from 72 to 10CFR71 configuration
- Transportation planning and execution
- Cask Unloading – Transfer from 10CFR71 to 72 configuration
- Point B – Site operating under 10CFR72

“You want to speed up the game, don't let the ball go out of bounds.” — Bert McCoy

# Point A Readiness

- Site infrastructure Improvements
  - Rail spur, barge slips, heavy haul path, etc.
  - Transfer equipment to address all aspects of canister transfer operations
- Transport cask contents
  - Approve CoC contents and conditions of transport
  - 72-71 Inspections and qualifications
- Programmatic controls
  - Staffing, procedures, permits and training
  - Contracts and transport planning
- Local stakeholder engagement support



# Cask Loading Readiness

- Onsite Preparation Activities
  - Mobilization of cask equipment and personnel
  - Training, dry runs and equipment checks
  - Canister inspections (as required)
- Canister Transfer to Transport Cask
  - Canister transfers
  - Cask closure and processing for transport condition
  - System checks, transfer to transport mode vehicle and surveys
  - Labeling, placarding, shipping papers



# Transportation Plan Execution

- Per transportation plan and route approval. NAC and partners continue to assess best path forward and routes to relocate NAC canisters to ISP.
- Different routes have different requirements – Primarily driven by States/Tribes, Railroads or navigable waterways – Coast Guard & others.
- In most cases, rail transportation appears to be preferred assuming selection of railcar and permissible routes.
  - Railcars – 10CFR49 Subtitle B Chapter II accepted by railroad, AAR S-2043 compliance. ATLAS an option?
  - Some routes will require investments – barge slips, roads to rail head, other railroad requirements, rail and interline upgrades, etc.
  - Security:
    - *On a typical NAC private shipment, secured escorts are provided primarily by the assigned States' law enforcement agencies (varies), as outlined in security plan.*
    - *A rail shipment can pursue similar approach leveraging services – state police or railroad police per 49 CFR § 207 – for example, CSX or UP Special Agents.*

# Transportation Plan Execution

- NAC Private Transport Planning, Notifications and Execution governed by 10 CFR 37, 10 CFR 71, 49 CFR
  - Private fuel shipments typically have involved notifications and coordination with NRC and State only. Tribes authorized by NRC can receive notifications.
- State primarily assigns responsibility to local law enforcement, first responders, others who really need to know (safeguards compliance). State bills the shipper for these services.
  - No other substantial stakeholder engagement has been required unless stipulated by licensee or authorities.
- Shipment tracking has been done privately with logistics partners. Railroad could provide similar service.
  - TRANSCOM could be useful – only if DOE provides access.
- In general, private shipments are only required to meet NRC and DOT regulations, whereas DOE may have additional self-imposed requirements.
  - Private/State services exist to address transport program aspects.



# Cask Receipt and Unloading Considerations

- Receipt facility is licensed and built to receive and store canister/contents
- Cask receipt and unloading facility or equipment / procedures and personnel.
- Transport cask receipt, inspections and canister transfer back to 72 storage configuration.
- Inspection during or after canister transfer must be adequate to ensure canister was not damaged during transport.
- Any damage discovered must be assessed and handled with approved repair procedures as needed.



## Point B – ISP Storage






- Storage cask move to the pad
- Operate/maintain per license
  - Aging management program
  - Required inspections
- Future transport assurance
  - Demonstrate continuous compliance with 72
  - Future transport casks may have added features to address any long-term issues.
  - Thermal and radiological decay will offer flexibility for system to transport.



# Private Shipments – Who Pays?

- U.S. DOE has no authority to fund shipments from commercial ISFSIs to private fuel storage facilities – new legislation needed
- Current CISF models demonstrate there is economical justification to consolidate canister storage operations
- Currently, utilities implement ISFSIs at their own expense, then seek monetary damages or reimbursements from U.S. DOE
  - Under a private model, a fuel owner may decide to ship fuel off-site to CISF, and then attempt to recover those costs from DOE
  - Utilities must prove that the financial decision is sound – reduces future costs and liabilities to the government
- It is widely recognized that absent any government action, there will be further delays in U.S. spent fuel final disposition and U.S. government liability will continue to increase
- A prudent, financially viable and feasible path is to pursue consolidated interim storage in the near future

# Private Transport Readiness by 2023

- Technology readiness – casks and transport systems 
- Relevant experience to execute transport program 
- Regulatory framework to perform private shipments 
- Private security or governmental jurisdiction (ex. States) and protocols to support shipments 
- Economical justification to move fuel to interim storage to minimize growing liabilities 
- Where government could really help?

“You want to speed up the game, don't let the ball go out of bounds.” — Bert McCoy



Juan Subiry  
VP Market and Product Strategy  
(404) 431-2614  
[jsubiry@nacintl.com](mailto:jsubiry@nacintl.com)

NAC International Inc.  
3930 East Jones Bridge Road, Suite 200  
Peachtree Corners, GA 30092 USA  
[www.nacintl.com](http://www.nacintl.com)