



Spent Nuclear Fuel Shipments in the US: Addressing the Myths

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Intent of Panel

- Current state of Spent Nuclear Fuel (SNF) shipments in the United States
- Respond to common questions raised by State stakeholders regarding SNF shipments
- Opportunity for State Liaison Officers to ask additional questions of Federal/State panel of SNF shipment SMEs
- Provide resources for future State questions/concerns

When was the last time Spent Nuclear Fuel (SNF) was shipped in the country?

- Where? What modes of transport?
- How often?
- General routes/endpoints?
- Past accidents/incidents with SNF transport in US?
 - Any international events? Lessons Learned?

What are the methods of transport allowed?

- Road, Rail, Ship/Vessel, Aircraft?
- Who has oversight?
- Limits?
 - Speeds
 - Class of Rail Tracks
 - Types of Roads Authorized for Use

DOE Resources for Transportation Planning

<https://start.energy.gov/Account/Login?ReturnUrl=%2F>

U.S. DEPARTMENT OF
ENERGY

Stakeholder Tool for Assessing
Radioactive Transportation, 3.0

START - For Official Use Only

Username (Your Email Address)

Password

Log in

OFFICIAL USE ONLY

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and category: 7, Law Enforcement Information.

Department of Energy review required before public release

Name/Org: Jeff Garner/M-310 Date: 08/14/2014
Guidance (if applicable) CG-SS-4

[Register](#) if you don't have an account.

[Forgot your password?](#)

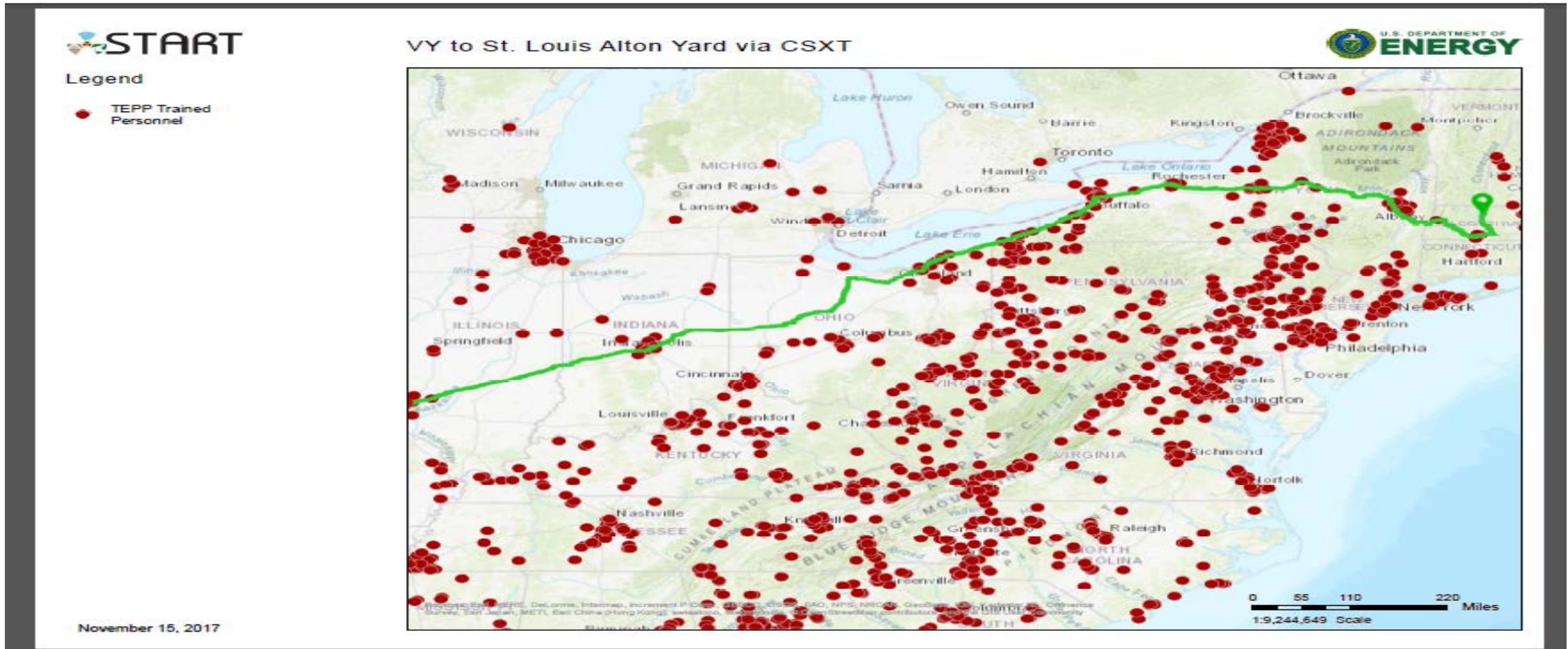


SNF Transportation Routes

- Are routes predefined?
 - Periodicity of review/revision?
- Is information about routes public information?
- Are state/local governments involved in establishing/revising routes?
- Do routes avoid large population centers?
- What are the current endpoints for routes? Yucca Mountain, CISFs, other?
- How/when will routes be developed for locations not currently served?
 - Are rail spurs to each nuclear power plant still active/available?
 - Other methods to move SNF from NPPs/ISFSIs to active rail spur?



Hypothetical START MAP (VT Yankee to Central US)



NOTE – the route noted in the above screenshot was hypothetical & developed for training purposes only

National Transportation Stakeholders Forum Website

- <https://www.ntsfi.info/main>
- For information about the NTSF, contact [Ellen Edge](#), DOE-EM Office of Packaging and Transportation.
- For information about the NTSF Website, contact [Mitch Arvidson](#), CSG Midwest.
- Information on 180(c) Funding available through NTSF website
 - <https://www.ntsfi.info/working-groups/section-180c>
 - Supports State / Tribal / Local agencies for DOE spent fuel shipments

Transportation Packages & Transport Vehicles

- Commercial or Federal/DOE designed?
 - NRC approval?
- Was large scale accident scenario testing for currently used packages conducted?
 - When?
 - Accident type simulated?
- Will new designs be required to conduct large scale accident testing?

Transportation Packages & Transport Vehicles



Navy M-140 SNF cask



Navy M-290
SNF Cask



Rail Escort Vehicle



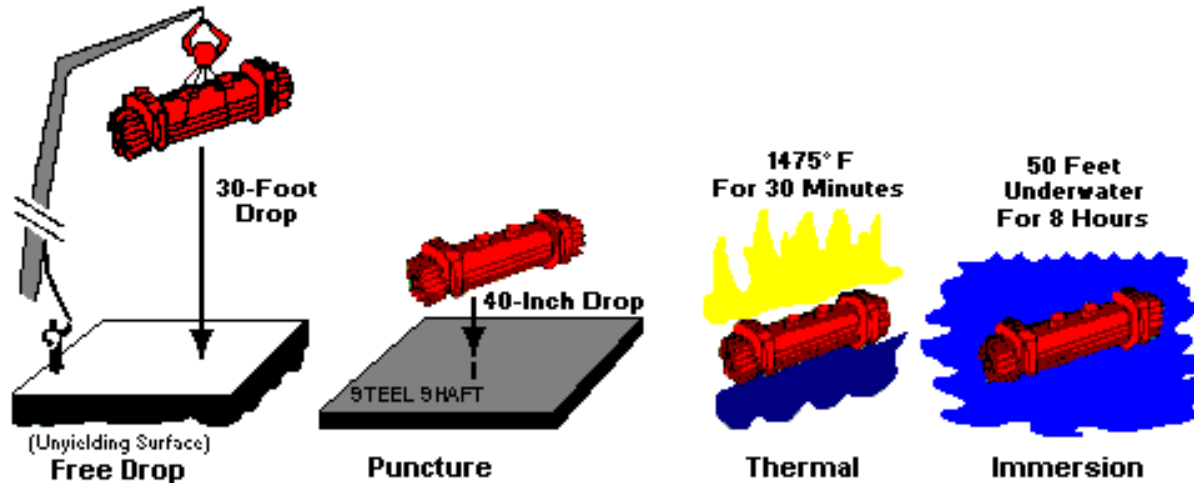
VY Decommissioning (RV Internals Cask on Rail)



RWC-H ready for rail transport



Requirements for Package Performance Tests



- Normal conditions of transport (10 CFR 71.71 & 49 CFR 173.465)
 - Hot and cold temperatures
 - Reduced and increased external pressure
 - Vibration
 - Water spray
 - Free drop (1 foot)
 - Penetration test
- Hypothetical accident conditions (10 CFR 71.73)
 - 30-foot drop test
 - 40-inch puncture test
 - Fire test
 - Water immersion test

Requirements for Package Performance Criteria

- Criticality safety
 - Single package(10 CFR 71.55)
 - Array of packages (10 CFR 71.59)
- Maximum dose rates for normal transport
(10 CFR 71.47 & 49 CFR 173.441)
- Additional criteria for Type B packages (10 CFR 71.51)
 - Containment for normal conditions of transport and hypothetical accident conditions
 - Maximum dose rates after hypothetical accident conditions



Security/Emergency Response during Transport?

- Who is responsible?
- What is the level of State/local involvement in escorting?
 - Who in States/local governments have “need to know”?
 - What transport-related information is sensitive?
 - Do “State 24/7 contacts” really need to be available 24/7?
- Are all shipments subject to advance notification of shipment rules?
- Can States/locals “object” to route or timing of transport on a particular route?
- What training is available for State/local responders/escorts?





BY THE NUMBERS

FISCAL YEAR 2022

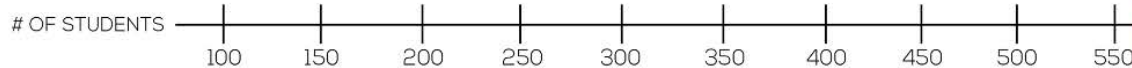
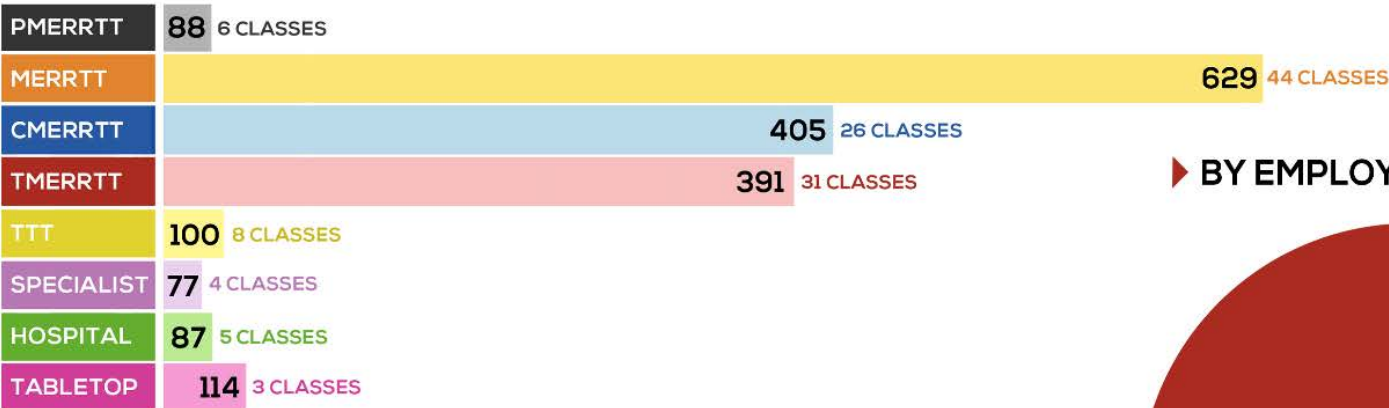


TOTAL NUMBER OF STUDENTS: 1,891

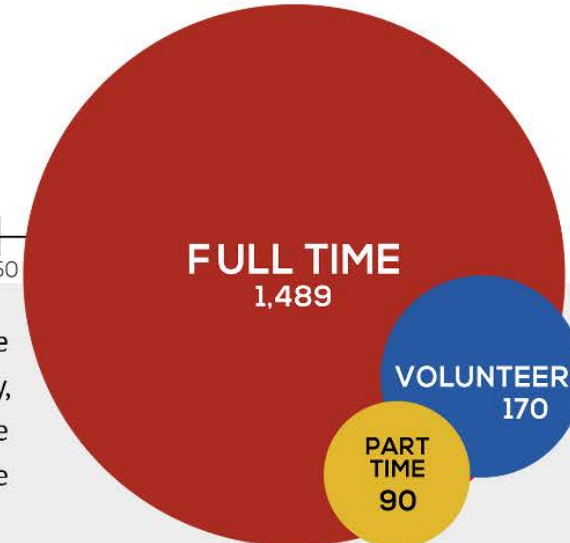
BREAKDOWN BY TYPE OF CLASS



OF THESE 1,891 STUDENTS, 438
WERE AWARDED MEDICAL C.E.H.

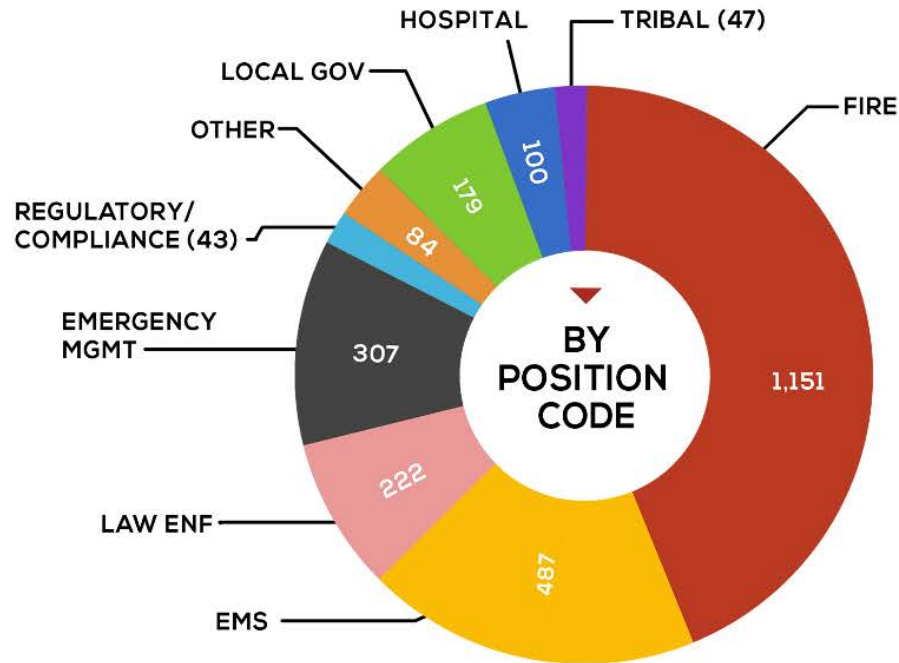
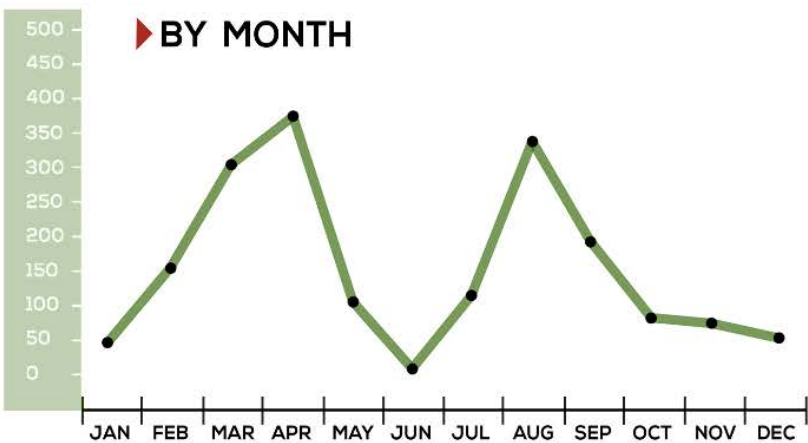
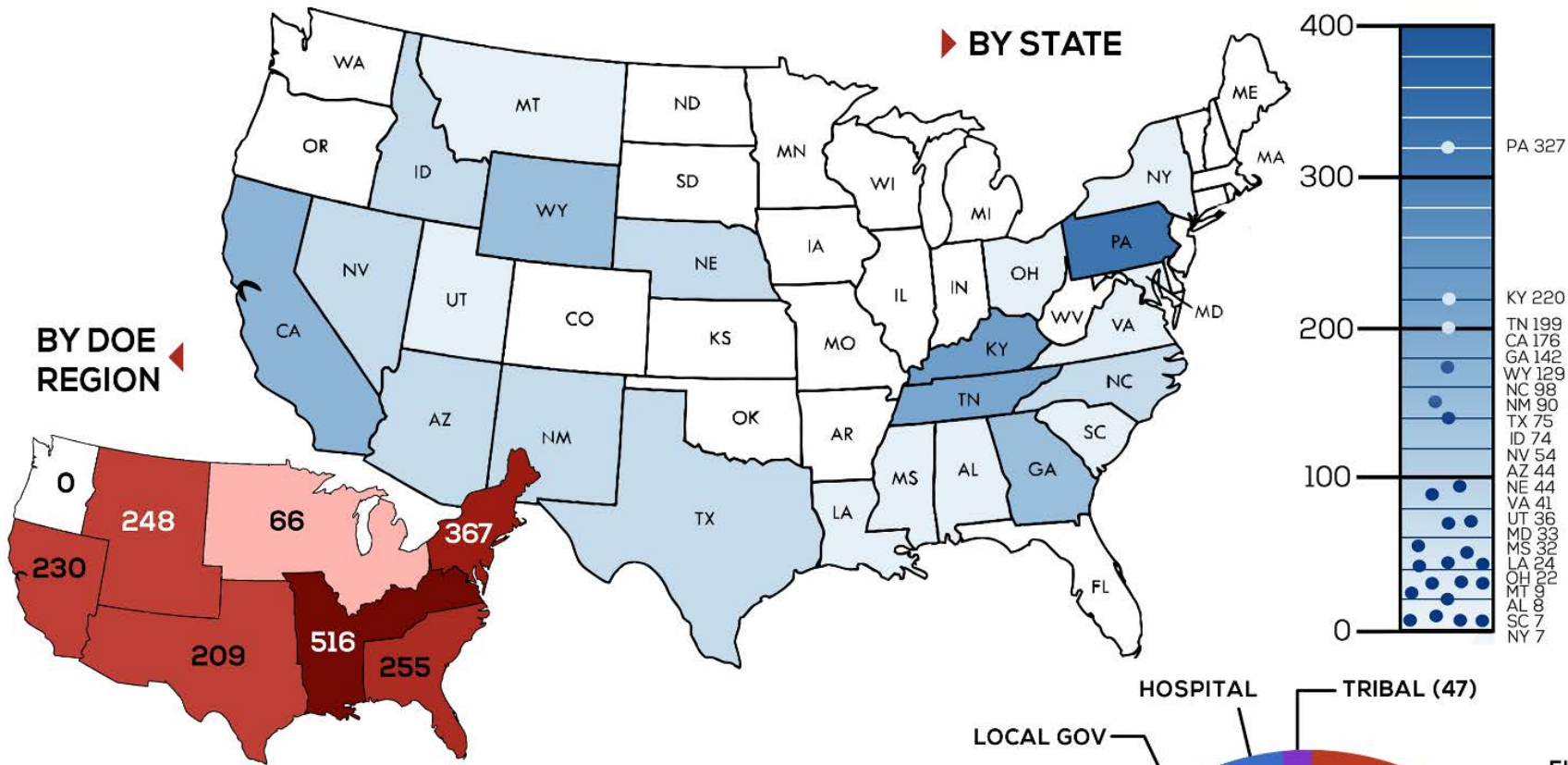


BY EMPLOYMENT STATUS



THE TEPP MISSION is to ensure that federal, state, tribal, and local responders have access to the plans, training, and technical assistance necessary to safely, efficiently, and effectively respond to transportation accidents involving DOE owned radioactive material. To accomplish this mission, a variety of tools have been developed to aid the response jurisdictions in their readiness activities.





Who is responsible for the SNF if transported to a CISF vs proposed repository?

- Does the responsibility change if a commercial Consolidated Interim Storage Facility (CISF) vs. a Federal storage facility?
- Who pays for transport to and storage in a CISF?
- How were transportation routes considered in safety/environmental reviews for applications for commercial CISFs?



Additional Questions / Topics to Ponder

- What did we miss?
- Other topics/burning questions we did not cover?
- Who are your States' advance notification designees?
 - Do you have working relationships with them?
- [5 Common Myths about Transporting Spent Nuclear Fuel \(DOE-NE\)](#)
- [NRC's Transportation of SNF webpage](#)

Contact Information for Panelists

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Reference Slides



VY Decommissioning (SNF to Dry Cask)

(1) Out of the Reactor Cavity/SFP



(3) Ready to "down-end" onto Transport Trailer



(2) Down from the Refuel Floor



VY Decommissioning (SNF Dry Cask to Vault)

Moving loaded Transfer Trailer with the “Tugger”



Transfer into the HTS (Storage Vault)



VY Decommissioning (Loading Cask to Rail Flat Car)



Loading MP197HB Container onto Flatcar



VY Decommissioning (Various LLW Rail Transport)



VY Decommissioning (Waste Transport Ops)



More waste bound for WCS in Texas



VY Decommissioning (Adding MP-197 Car to a Consist)



VY Decommissioning (HRCQ Shipment Pick-Up on Manifest Train)

