Page 2  Attendance Spreadsheet

Page 3  Transportation of Low-Level Waste to the Nevada National Security Site - Educational Session

Page 37 Optimization of Hybrid Public Meetings Approach Briefing ~ Work Plan Item #2
<table>
<thead>
<tr>
<th>Name</th>
<th>11/10/21*</th>
<th>2/16/22**</th>
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**KEY:** ✓ - Present   E - Excused  V - Vacant  U - Unexcused

*Virtual Full Board Meeting

**Hybrid Full Board Meeting
Transportation of Low-Level Waste to the Nevada National Security Site (NNSS) – Educational Session

Andrew Worker, Waste Management Activity Lead
U.S. Department of Energy (DOE)
Environmental Management (EM) Nevada Program
March 16, 2022
Outline

• Background of Waste Disposal
• Types of Waste Disposed at NNSS
• Reasons for NNSS Selection
• Federal Regulations and Requirements
• Oversight Activities
• Preparing Shipments
• Waste Packaging
• Hazard Communication
• Carrier Selection
• Transporting Waste to NNSS
• Transit Communications
• Waste Receipt at NNSS
• Emergency Preparedness

Southwest Experimental Fast Oxide Reactor (SEFOR)
Vessel Shipment at CA-NV Border Awaiting
Nevada State Police Escort
Background of Waste Disposal

• Cold War-related activities and nuclear research generated waste at sites across the country

• DOE is responsible for consolidating and disposing waste generated by DOE clean-up activities and ongoing national security and science missions

• DOE, under the authority of the Atomic Energy Act of 1954, as amended, self-regulates all material (including waste) under DOE control (management)
  – DOE Orders provide requirements that must be followed, such as DOE Order 435.1
  – U.S. Nuclear Regulatory Commission (NRC) does not regulate DOE’s radioactive materials and/or waste
NNSS Waste Acceptance and Disposal

- Manage the safe acceptance and disposal of classified, low-level radioactive waste (LLW), mixed LLW (MLLW), classified non-radioactive, and classified non-radioactive hazardous waste at the NNSS
  - No high-level, transuranic, or commercially generated waste is accepted
  - On-site waste has been compliantly disposed at the NNSS since 1961
  - Complies with rigorous NNSS Waste Acceptance Criteria (WAC) and applicable federal and state regulations
  - Protects the safety of the public
Types of Waste Disposed at the NNSS

- LLW is radioactive waste not categorized as high-level waste, transuranic waste, spent nuclear fuel, or by-product material
  - Typical waste includes contaminated metal, debris, soils, equipment, personal protective clothing, tools, etc.
- MLLW contains LLW and a hazardous component as defined by the U.S. Environmental Protection Agency (EPA) under the Resource Conservation and Recovery Act (RCRA)
- Classified waste requires protection for national security reasons (facility secured 24/7)
  - May contain a hazardous component
  - May be radioactive
Reasons for NNSS Selection

• Favorable disposal location due to site remoteness, security, and arid environment
  – No groundwater pathways
  – Deep groundwater (~700 feet – 1,600 feet) at Frenchman and Yucca Flat
  – Low precipitation (5-7 inches per year) at lower elevations
## FY 2019 - 2022 NNSS Disposal Volumes

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>FY 2019 Actuals</th>
<th>FY 2020 Actuals</th>
<th>FY 2021 Actuals</th>
<th>FY 2022 Forecasted</th>
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<tr>
<td>Low-Level Waste (LLW)</td>
<td>952,220</td>
<td>410,255</td>
<td>470,781</td>
<td>728,431</td>
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<tr>
<td>Mixed LLW (MLLW)</td>
<td>123,363</td>
<td>40,846</td>
<td>60,556</td>
<td>143,868</td>
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<tr>
<td>Classified Non-Radioactive Waste (CNR)</td>
<td>2,511</td>
<td>7,539</td>
<td>7,381</td>
<td>12,275</td>
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<tr>
<td>Classified Non-Radioactive Waste (CNRH)</td>
<td>94</td>
<td>1,010</td>
<td>704</td>
<td>2,153</td>
</tr>
<tr>
<td><strong>VOLUMES TOTAL BY FY</strong></td>
<td><strong>1,078,188</strong></td>
<td><strong>459,650</strong></td>
<td><strong>539,422</strong></td>
<td><strong>886,727</strong></td>
</tr>
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| Total Shipments                   | 1,365*          | 685*            | 676*            | 232 (Q1)*          |
| # Trucks on Southern Routes       | 730             | 536             | 474             | 201 (Q1)           |
| # Trucks on Northern Routes       | 619**           | 131             | 170             | 27 (Q1)            |

*Total does not include onsite shipments

**Includes 458 shipments from Tonopah Test Range
Generator Locations and General Transportation Routes
Federal Regulations
(applies to DOE, its contractors, and commercial entities)

- 10 Code of Federal Regulations (CFR), Energy
  - Packaging of Type B and Fissile
- 40 CFR, Protection of Environment
  - Documentation
  - Hazard Communication
- 49 CFR, Transportation
  - Identification and Characterization of HazMat
  - HazMat Training
  - Packaging
  - Documentation
  - Security
  - Emergency Response Information
  - Hazard Communication
  - Motor Carrier/Driver
DOE Requirements

• DOE Orders (O) and Manual (M)
  – DOE O 460.2A, Departmental Materials Transportation and Packaging Management, which requires a transportation logistics program that includes carrier evaluations

• NNSSWAC
  – Section 6, Waste Transportation and Receipt Information
Oversight Activities

• The following organizations perform oversight activities on generators and/or transporters:
  – U.S. Department of Transportation
  – U.S. Environmental Protection Agency
  – U.S. Department of Energy
  – Radioactive Waste Acceptance Program
  – NNSS Radioactive Waste Management Complex
  – Waste generators perform due diligence on transporters
Preparing Shipments

- U.S. Department of Transportation (DOT) Hazardous Materials Regulations, apply to both shippers and motor carriers
  - Hazardous materials shipping rules for Class 7 materials (and for all other hazardous materials) acknowledge package integrity as a fundamental control
- Shipper must consider “activity,” dose rate, and contamination
- Not everything that is radioactive is “radioactive for the purposes of transportation”
  - Non-regulated
  - Class 7
Waste Packaging

10-160B Cask

Southwest Experimental Fast Oxide Reactor (SEFOR) Vessel

55-gallon Type A Metal Drums

B-25 Standard Waste Boxes
Waste Packaging (continued)

- NNSSWAC requires specific packaging requirements for types of waste or package types (weight limits, strength requirements, shielding, etc.)
- Package types include boxes, drums, soft-sided Industrial Packaging, cargo containers, and Type B containers with Certificate of Compliance
Hazard Communication

- Hazard Communication
  - Marking
  - Labeling
  - Placarding
- Required by DOT and EPA
- Provides handlers and first responders with information on hazards in the package and/or conveyance
- NNSSWAC requires additional informational markings for waste disposal
Hazard Communication (continued)

Yellow II Label with Associated Markings

Markings, Labels, and Placards

Radioactive “7” Placards
Motor Carrier Selection and Monitoring

- Waste generator selects the motor carrier

- Per DOE Orders and NNSSWAC, **motor carriers transporting waste** to the NNSS must be listed on the DOE Motor Carrier Evaluation Program (MCEP) Quarterly Evaluated Carrier Performance List (ECPL)

- The MCEP provides DOE/National Nuclear Security Administration (NNSA) management and its contractors with a **consistent, systematic framework for evaluating commercial carriers’ capability to safely conduct DOE/NNSA radioactive or hazardous materials shipments**
Motor Carrier Selection and Monitoring (continued)

- **MCEP ECPL**
  - Routinely monitors motor carrier performance
  - Provides information quarterly for use by DOE contractors

- **Monthly Motor Carrier Due Diligence Reviews**
  - As ECPL data could be up to four months old, Radioactive Waste Acceptance Program (RWAP) performs a monthly detailed review of motor carriers who have historically transported waste/material to the NNSS
  - Monthly review utilizes information from the Federal Motor Carrier Safety Administration [Safety Measurement System](#) website, as well as the DOE Automated Transportation Logistics and Analysis System
  - Individual reviews are documented on the NNSS *Monthly Motor Carrier Due Diligence Review* form and made available to generators via the RWAP SharePoint site
Motor Carrier Selection and Monitoring (continued)

- **Generators Day of Shipment Review**

  - RWAP also provides generators with an option of providing objective evidence that a day of shipment review was performed (covering a minimum set of data points identified by RWAP), by making available the *Waste Generators Day of Shipment Due Diligence Review* form as part of the monthly review form.
Summary of Due Diligence Process

- Day of Shipment Review (Shipper)
- Monthly Due Diligence Review (RWAP)
- Quarterly Evaluated Carrier Performance List (EM Office of Packaging & Transportation)
Carrier Route Selection

• The selection of routes for radioactive material is governed by 49 CFR 397.101 that states that a carrier or any person operating a motor vehicle containing a Class 7 (radioactive) material (49 CFR 172.403) for which placarding is required (49 CFR part 172) shall:
  
  – Ensure that the motor vehicle is operated on routes that minimize radiological risk;
  
  – Consider available information on accident rates, transit time, population density and activities, and the time of day and the day of week during which transportation will occur to determine the level of radiological risk
Transporting Waste to the NNSS

• Routing within Nevada region
  – Shipments prohibited over Hoover Dam, the O'Callaghan–Tillman Memorial Bridge and through Las Vegas I-15/US-95 interchange are ‘off-limits’ under the NNSSWAC
  – Preferences established for travel during summer and winter months
  – CA-127 blackout dates during specific holiday events
  – All highway, no direct rail access – surrounded by U.S. Air Force land

Quarterly Waste Volume and Transportation Reports accessible at:
nnss.gov/pages/programs/RWM/Reports.html
Transporting Waste to the NNSS (continued)

• The **driver and the generator** discuss and determine the best route (based on current weather and road conditions) and the driver acknowledges the route selected on the [Drivers Route/ Shipment Information](#) (aka driver’s questionnaire) prior to exiting the origin facility.

• The document, among other things:
  - Identifies restricted routes
  - Collects information about stops in Nevada for fueling, DOT-required rest breaks, **load securement checks**, and layovers
# 1st Quarter FY 2022 Shipment Routes

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<th>Route Description</th>
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<td>US-6, US-95 (TTR)</td>
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<td>NNSS On-Site Shipments</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>232</strong></td>
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# Shipper/Generator and Carrier Interface

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<th>Motor Carrier/Driver</th>
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<tbody>
<tr>
<td>Identify and characterize the waste</td>
<td>Provide qualified driver and equipment</td>
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<tr>
<td>Package the waste</td>
<td>Inspect equipment (daily requirement)</td>
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<tr>
<td>Apply Hazard Communication</td>
<td><strong>Secure packages to conveyance</strong></td>
</tr>
<tr>
<td>Prepare compliant shipping documents</td>
<td>Follow rules of the road (FMCSR)</td>
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<tr>
<td>Examine transportation equipment</td>
<td>Follow driver’s instructions and agreed upon route</td>
</tr>
<tr>
<td>Observe/assist load securement</td>
<td><strong>Communicate to generator/NNSS any in-transit issues</strong></td>
</tr>
<tr>
<td>Select route with driver</td>
<td></td>
</tr>
<tr>
<td>Communicate to the driver the shipments driver’s instructions</td>
<td></td>
</tr>
<tr>
<td><strong>Notify NNSS of shipments using HAZTRAK</strong></td>
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</table>
Load Securement

- Synthetic Straps
- Blocking/Bracing
- Chains
Required In-Transit Notifications

• The generator or motor carrier must notify the NNSS Operations Control Center within one hour if any of the following occur:
  – Delayed arrival greater than four hours
  – Accident
  – Breach or possible breach of packages
  – Any stop by law enforcement that results in a moving violation
  – Any rerouting or deviation from the agreed upon route while in Nevada
RWAP Transportation Subject Matter Experts

• Assess NNSS waste generators procedures and processes involving the preparation and shipment of NNSS bound waste against the requirements of the NNSSWAC and various regulations (NRC, DOT, EPA)

  – As part of the facility evaluation teams
  – During day of shipment surveillances of specific shipments
Proactive Communications to Generators

• RWAP provides generators with a daily report with national and regional weather maps, as well as current road conditions (including scheduled roadwork) in six regional states (CA, AZ, UT, ID, OR, WY) and Nevada along routes used to transport waste to the NNSS.

• RWAP provides e-mail alerts as needed to generators with shipments on routes affected by closures or restrictions due to natural disasters (earthquakes/flash flooding, etc.) or scheduled roadwork.
Waste Receipt at NNSS

• Upon arrival at the NNSS, shipping documentation is verified against the waste information preapproved through the RWAP process

• Any discrepancy in shipping documentation, packaging, or radiological surveys may result in rejection of the shipment

• Discrepancies are logged and immediate actions taken, if needed
Transportation Events

• Transportation events defined as: truck damage while parked, traffic-related accident, load shift, or reported leaking/breached package

• No transportation event occurred during the 1st Quarter of Fiscal Year 2022

• Since January 1999, 32,955 radioactive and classified waste shipments have been safely transported to the NNSS
  – 20 transportation events occurred to include a load shift, paperwork discrepancies, and other vehicles impacting trucks while parked
  – Three of the 20 shipments involved a breached package but there was NO release of radioactive contamination
Emergency Preparedness Working Group (EPWG) Funding Update

- EM Nevada Program funds the grant based on $.50 per cubic foot of classified, LLW and MLLW disposed at the NNSS
- Nearly $15.6 million has been distributed through the State of Nevada Division of Emergency Management to Clark, Elko, Esmeralda, Lincoln, Nye, and White Pine counties
  - Funding provided in accordance with approved grant application and oversight of funding use
- Priorities for grant funding include consideration for the needs of a county and the resource base available in that county
Training Coordination

• NNSS uses DOE’s Transportation Emergency Preparedness Program (TEPP) to improve understanding of radiological hazardous material response
  – More than 1,433 students (representing 40 communities) trained during 92 classes conducted in Nevada since 2014
  – TEPP worked with Nye County emergency responders to film a new, nationwide training video involving a radioactive material
Review

- Background of Waste Disposal
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- Oversight Activities
- Preparing Shipments
- Waste Packaging
- Hazard Communication
- Carrier Selection

- Transporting Waste to NNSS
- Transit Communications
- Waste Receipt at NNSS
- Emergency Preparedness
Optimization of Hybrid Meeting Approach – Work Plan Item #2

Jesse Sleezer, Strategic Communications Manager
Navarro, Contractor to the
U.S. Department of Energy (DOE)
Environmental Management (EM) Nevada Program
March 16, 2022
NSSAB – Work Plan Item #2

• From a community perspective, the Nevada Site Specific Advisory Board (NSSAB) will provide recommendation(s) for ways the EM Nevada Program could:
  – Enhance or optimize hosting of hybrid-format public meetings
  – Improve public participation during NSSAB Full Board meetings

• NSSAB recommendation is due in May 2022
Outline

• NSSAB Meetings: Recent History
• What is a Hybrid Meeting?
• Hybrid Meetings: Pros and Cons
• Considerations for Recommendations
• Related Request from EM Headquarters
• NSSAB Meeting Public Outreach
NSSAB Meetings: Recent History

• Prior to March 2020, all NSSAB Full Board meetings were conducted in-person
  – Option to call-in via phone; members/liaisons followed along with handouts

• Since March 2020, all NSSAB meetings have involved a virtual component
  – Hosted via Microsoft Teams
  – Option to call-in via phone remains
  – July 2021 and February 2022 meetings utilized “hybrid” format
What is a Hybrid Meeting?

• Generally, any meeting that allows for both remote and in-person attendance
• For NSSAB meetings, those hosted in-person with the capability to participate via Microsoft Teams
  – At this time, primarily hosted in Molasky 15th Floor Multimedia Room
  – EM Nevada/Navarro exploring options for hosting hybrid meetings in off-site locations (i.e., community centers)

“[A] recent McKinsey survey suggests that 90% of organizations will adopt some combination of remote and on-site work as they emerge from Covid restrictions. This new model will bring with it a dramatic change in how we meet — a hybrid mix of in-person attendees and remote meeting participants seems an inevitable component of our ‘new normal.’”

Hybrid Meetings: Pros and Cons

• Pros in our experience:
  – Increased participation in general
  – Broader participation by geography

• Cons in our experience:
  – Quality of conversation
  – Ease of collaboration
  – Loss of “hallway” discussions
  – Technical issues by platform
  – Technical issues by user
Considerations for Recommendations

• This is a unique Work Plan item, because your feedback will have a direct impact on the Board’s own experience.

• As you consider recommendations, some key considerations:
  – Technical enhancements?
  – Process enhancements?
  – Expectations for participation?
  – Transferability to off-site meetings?
  – General preferences?

NSSAB Hybrid Full Board Meeting – July 2021
Related Request from EM Headquarters

• EM-2 recently requested that Site-Specific Advisory Boards (SSABs) discuss ways to improve public participation during Full Board meetings
• Encouraged SSABs to consider community demographics and board logistics, such as meeting times, locations, etc.
• Natural nexus with this Work Plan item; please keep this request in mind as you consider recommendations

Todd Shraeder, DOE Principal Deputy Assistant Secretary for the Office of EM (EM-2)
NSSAB Meeting Public Outreach

- Notice published in the Federal Register
- Newspaper ads (LV Review Journal, Pahrump Valley Times, Tonopah Times)
- Social media (Facebook and Twitter)
- Press release to local news outlets
- NNSS News (33,875 subscribers)
- Community calendars
- NSSAB and NNSS websites
- Bulletin board flyers posted by NSSAB members
Review

- NSSAB Meetings: Recent History
- What is a Hybrid Meeting?
- Hybrid Meetings: Pros and Cons
- Considerations for Recommendations
- Related Request from EM Headquarters
- NSSAB Meeting Public Outreach
Questions
NSSAB Path Forward – Work Plan Item #2

• From a community perspective, the NSSAB will provide recommendation(s) for ways that the EM Nevada Program could:
  – Enhance or optimize hosting of hybrid-format public meetings
  – Improve public participation during NSSAB Full Board meetings

• NSSAB recommendation is due in May 2022