Nuclear Fuels Storage and Transportation Planning Project (NFST) Program Updates and FY16 Planning

Erica Bickford, PhD
DOE-NFST
CSG-MW MRMT Committee Meeting
November 17-18, 2015
Des Moines, IA
Contents

- Background
- Leadership update
- Consent-Based Siting
- FY16 Funding and Program Planning
- Action Updates
  - Railcar
  - NFST Reports
Waste Program Background

- 1982 – Nuclear Waste Policy Act is passed
- 1987 – Amendments to the Nuclear Waste Policy Act
- 2002 – H.J. Res. 87 – Congress approved the site
- 2009 – Administration withdraws the license application
- 2010 – Office of Civilian Radioactive Waste Management is closed
  - Office of Used Fuel Disposition established in Office of Nuclear Energy
- 2010 – President charters the Blue Ribbon Commission on America’s Nuclear Future
- 2012 – Blue Ribbon Commission issues their final report to DOE
- 2012 – DOE establishes the Nuclear Fuels Storage and Transportation Planning Project
- 2013 – The Administration releases it’s *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*
- Currently – DOE is laying the groundwork
Consent-Based Siting

On March 24, President Obama authorized the Energy Department to move forward with planning for a separate repository for high-level radioactive waste resulting from atomic energy defense activities.

- **Actions the Department will undertake**
  - Planning for a defense-only repository
  - Moving forward with planning for interim storage of commercial spent fuel
  - Moving forward with a consent-based siting process for both types of facilities
Projected Volumes of Commercial SNF, DOE-Managed SNF, and DOE-Managed HLW, in m$^3$

**Commercial and DOE-Managed HLW and SNF**
- Commercial SNF: 183,896 m$^3$ (85%)
- DOE SNF and HLW: 33,424 m$^3$ (15%)

**DOE-Managed HLW and SNF**
- DOE HLW: 25,260 m$^3$ (12%)
  - DOE SNF (includes naval SNF): 7,165 m$^3$ (3%)

**DOE-Managed HLW**
- Treated Calcine waste: 3,561 m$^3$ (14%)
- Existing SRS HLW glass: 2,969 m$^3$ (11%)
- Germany HLW glass: 3,988 m$^3$ (15%)
- Projected SRS HLW glass: 39,878 m$^3$ (54%)
- WVDP HLW glass: 245 m$^3$ (1%)
- Treated sodium-bonded fuel wastes: 721 m$^3$ (3%)
- Vitrified Cs-Sr capsules: 453 m$^3$ (2%)
- Existing SRS HLW glass: 132 m$^3$ (<1%)

**Source:** U.S. Department of Energy, Nuclear Energy
Waste Packages

Source: Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel, October 2014
Questions from Stakeholders

- How will siting a defense only repository affect siting commercial storage and disposal?
- Will modifications to the standard contract be needed to pursue storage?
- How do proposals for private interim storage affect DOE’s plans?
# NFST FY16 Program Planning

## FY16 Budget Scenarios

<table>
<thead>
<tr>
<th>Subprogram</th>
<th>(dollars in thousands)</th>
<th>FY 2015 Enacted</th>
<th>FY 2016</th>
<th>House Mark</th>
<th>Senate Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Recovery &amp; Waste Form Development</td>
<td></td>
<td>35,300</td>
<td>35,300</td>
<td>35,300</td>
<td>34,800</td>
</tr>
<tr>
<td>Advanced Fuels</td>
<td></td>
<td>60,100</td>
<td>48,700</td>
<td>60,100</td>
<td>60,100</td>
</tr>
<tr>
<td>Systems Analysis and Integration</td>
<td></td>
<td>16,900</td>
<td>11,200</td>
<td>11,200</td>
<td>11,100</td>
</tr>
<tr>
<td>MPACT</td>
<td></td>
<td>7,600</td>
<td>8,600</td>
<td>8,600</td>
<td>8,500</td>
</tr>
<tr>
<td>Fuel Resources</td>
<td></td>
<td>5,600</td>
<td>5,600</td>
<td>5,600</td>
<td>5,500</td>
</tr>
<tr>
<td>Used Nuclear Fuel Disposition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td></td>
<td>49,000</td>
<td>75,360</td>
<td>55,000</td>
<td>64,000</td>
</tr>
<tr>
<td>Integrated Waste Mgmt. System</td>
<td></td>
<td>22,500</td>
<td>30,000</td>
<td>0</td>
<td>30,000</td>
</tr>
<tr>
<td>DOE-Managed HLW &amp; SNF</td>
<td></td>
<td>--</td>
<td>3,000</td>
<td>0</td>
<td>3,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>197,000</strong></td>
<td><strong>217,760</strong></td>
<td><strong>175,800</strong></td>
<td><strong>217,000</strong></td>
</tr>
</tbody>
</table>
Objective: Activities to broadly support Siting, Storage and Transportation objectives

- Continued development of systems-oriented modeling tools and analysis
  - UNF ST&DARDS database
  - Transition from legacy tools

- System Integration and standardization

- Knowledge and Document Management
Objective: Plan for SNF storage

- Generic Storage Facility Designs
  - Pilot Interim Storage Facility and topical safety analysis report (TSAR)

- Functional and Operational Requirements
  - ASME Acceptance criteria

- Environmental Considerations

- Regulatory Considerations
Objective: Prepare for large-scale transport of SNF to commence within 10 years

- **Engagement with Tribes and states**
  - Cooperative Agreements, Transportation Core Group, NTSF, ad hoc Working Groups
  - 180(c) Policy, SNF Rail/Routing, TPF

- **Transportation Operations**
  - Shutdown site visits
  - START web-GIS tool

- **Hardware**
  - S-2043 Railcar – design
DOE is developing a railcar to comply with AAR S-2043

August 2015 – DOE signed a contract with AREVA Federal Services
- Subcontractors – KASGRO rail, TTCI
- Navy S-2043 railcar team

Contract covers design, analysis and prototype fabrication

Future solicitations for prototype testing and large-scale fabrication

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qtr</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

AWARD PREPARATION

PHASE 1 - CONCEPTUAL DESIGN

PHASE 2 - PRELIMINARY DESIGN

PHASE 3 - PROTOTYPE FABRICATION

Contract Award 08/21/15

Cradle Conceptual Design Complete

AAR Notice to Proceed to Test Phase
NFST Reports

- Updated Shutdown Sites Report, May 2015
- Routing Paper, July 2015
- Performance Specification for STAD, July 2015
- Rationale for the Performance Specification for STAD, July 2015
- Initial Standardized Canister System, Sep. 2015
- Generic Design Alternatives for Dry Cask Storage, Oct. 2015
- Generic Design for Small Size STAD, Oct. 2015
- Operational Requirements for STAD, Oct. 2015
NFST reports & documents available on CURIE Website
http://curie.ornl.gov/

Welcome to Your Used Fuel Resource

The CURIE (Centralized Used Fuel Resource for Information Exchange) website is a national resource, accessible to industry, vendor, Federal, and laboratory partners, which provides usable, collaborative document and data access.

Recent Documents

- Civilian Nuclear Waste Disposal
  The Congressional Research Service prepared a report in August titled “Civilian Nuclear Waste...”
  Tue, 10/13/2015 - 13:35

- Task Order 21: Operational Requirements for Standardized Dry Fuel Canister Systems
  UPDATED FINAL...
  Per the requirements of the Task Order 21: Operational Requirements for Standardized Dry Fuel...
  Mon, 10/05/2015 - 16:27

- Task Order 18: Updated Final Report: Generic Design for Small Standardized Transportation, Aging and...
  Per the requirements of the Task Order 18: Generic Design for Small Standardized Transportation...
  Mon, 10/05/2015 - 16:31

- Task Order 16: Generic Design Alternatives for Dry Storage of Spent Nuclear Fuel
  This report addresses the Scope of Work (SOW) for Task Order 16, “Generic Design Alternatives for...”
  Thu, 10/01/2015 - 17:20
Questions?

Erica Bickford
Transportation Program Manager
DOE Nuclear Fuels Storage and Transportation Planning Project
Erica.Bickford@nuclear.energy.gov