License Renewal Application
for the
Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI)
(Materials License SNM-2504)
Docket 72-9

- Status Update -

Presentation to the United States Nuclear Regulatory Commission

March 12, 2009

EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

FSV ISFSI Representatives

- **U.S. Department of Energy, Idaho Office (DOE-ID)**
  - ***Jan Hagers**, Licensing Manager*
  - ***Ken Whitham**, DOE-ID Facility Director*

- **CH2M-WG Idaho, LLC (CWI)**
  - ***James Kaylor**, Project Director, Idaho Nuclear Technology and Engineering Center (INTEC) Operations (TMI-2 ISFSI location)*
  - ***Randy Elwood**, Manager, ISFSI Management*
  - ***Ted Borst**, FSV ISFSI Facility Manager*
  - ***Greg Hall**, Regulatory Compliance Lead*

Meeting Agenda

- **Introduction of meeting attendees**
- **Provide License Renewal Application Status Update to the NRC**
  - *Licensed Material and License Conditions (Review)*
  - *License Renewal Approach (Review)*
  - *Scoping Evaluation*
  - *Aging Management Reviews*
  - *Aging Management Activities and Programs*
  - *Time-Limited Aging Analyses (TLAA)*
  - *License Bases Document Revisions*
  - *Schedule*
- **Revised Approach to Natural Gas Infrastructure Accident Analysis**
- **Summary**
- **Questions**
- **Obtain NRC Feedback**
  - *Scoping Evaluation (Individual Fuel Element Grapple and Transfer Cask)*
  - *Standby Storage Well Aging Management Activity/TLAA*

Summary of Previous Meeting (September 2007)

- **DOE-ID Provided Information**
  - *Planned submittals to apply for renewal of the Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI)*
    - 10 CFR Part 72 license renewal application in November 2009
    - Associated 10 CFR 72.7 request for exemption from 10 CFR 72.42(a) in applying for an extended renewal term
  - *Overview of approach*
  - *Schedule for submittal to the NRC*
- **Overview of (then) Proposed Upgrade of Method to Calculate Pressure Excursions Related to Unlikely Natural Gas Infrastructure Accidents**
- **Obtained NRC Feedback**
  - *Follow preliminary renewal guidance used for Surry, Robinson, and Oconee ISFSI license renewal applications*

FSV ISFSI – Front View (Looking Northeast)

FSV ISFSI – Rear View (Looking West Northwest)

FSV ISFSI – Proximity to FSV Gas Turbines (Repowering)

FSV ISFSI – Charge Face (Looking South)

FSV ISFSI – Charge Face (Looking North)

FSV Fuel Element

FSV ISFSI Licensed Material

- **1,482 irradiated FSV HTGR fuel elements using thorium and uranium enriched to not greater than 93.15% U-235**
  - *In the form of irradiated TRISO coated (Th:U)C_2 fuel particles inside hexagonal graphite fuel elements*
  - *Maximum of 1,036 kg U and 14,540 kg thorium initially contained in fuel elements*
- **Transuranium elements, source material, byproduct material, and associated radioactive material related to receipt, storage, and transfer of fuel elements**
  - *In the form of irradiated fuel elements, contaminated equipment, depleted uranium shielding materials, and low-level radioactive waste*
  - *Maximum quantity contained in:*
    - 1,482 irradiated HTGR fuel elements,
    - 270 contaminated fuel storage containers,
    - one contaminated container handling machine,
    - three contaminated storage wells,
    - three depleted uranium shielding components
    - low-level radioactive waste related to receipt, storage, and transfer of fuel elements

FSV ISFSI Licensed Material (continued)

- **Byproduct and special nuclear material related to receipt, storage, and transfer of fuel elements**
  - *In the form of calibration and sealed sources used for sample analysis and instrument calibration*

- **Actual ISFSI Storage Configuration**
  - *244 loaded storage well positions (six fuel elements per position)*
  - *13 empty storage well positions*
  - *Seven storage well positions that could be emptied (one contains an empty FSC loaded with six dummy fuel elements, six contain one empty FSC each)*
  - *Six storage well positions each containing one empty FSC which interfere with CHM movement*
  - *Although the ISFSI is licensed to store 1,482 fuel elements, 1,464 fuel elements are actually stored.*

FSV ISFSI License Conditions

- **All licensed material must be related to spent fuel storage and is authorized for receipt, possession, storage, and transfer, and use**
  - *Includes use of sealed sources for calibration and sample analysis*
- **Authorized place of use is the FSV ISFSI in Platteville, CO as described in the Safety Analysis Report and per the Technical Specifications**
- **Technical Specifications are incorporated into the License including**
  - *Functional and Operating Limits for spent fuel elements stored at the FSV ISFSI*
  - *Limiting Conditions for Operation and Surveillance Requirements*
    - Modular Vault Dry Store (MVDS) Cooling System
    - Container Handling Machine
    - Fuel Storage Containers
  - *Design Features*
  - *Administrative Controls*
    - Includes a Natural Gas and Oil Monitoring Program requirement

FSV ISFSI License Conditions (continued)

- **Must follow the Physical Protection Plan**
- **Repackaging of fuel elements is not authorized**
- **Must Inform NMSS of planned replacement of DOE's operations contractor for the FSV ISFSI at least 90 days in advance**
  - *Assess performance of replacement contractor within 180 days of replacement*
- **Must request necessary funds from Congress to ensure compliance of FSV operations and decommissioning under the license**
  - *Notify NRC in writing of anticipated or forecasted shortfalls*
  - *Submit plan detailing specific measures to prevent adverse impacts on ISFSI operations*

License Renewal Approach

- **An exemption from 10 CFR 72.42(a) will be submitted in accordance with 10 CFR 72.7 for a 30-year extended license term to accommodate:**
  - *A February 13, 1996 agreement between DOE and the Governor of Colorado requiring that all SNF at the FSV ISFSI be shipped out of Colorado no later than January 1, 2035*
  - *Allowance for adequate time for subsequent decontamination and decommissioning of the ISFSI required for license termination.*
- **DOE has issued a letter to the Governor of Colorado, the Honorable Bill Ritter, explaining the need to request an exemption to the regulations to extend the FSV ISFSI license term beyond the standard 20-year renewal term**
  - *NRC Project Manager was copied on this letter.*
- **The addition of a new natural gas feed line to support the generating capacity expansion of the FSV Station has been evaluated and determined to be enveloped by the existing safety analysis. A revised SAR Chapter 3 reflecting the updated oil and gas industry infrastructure will be submitted with the license renewal application.**

License Renewal Approach (continued)

- **The Manager of the Department of Energy's Idaho Operations Office (DOE-ID) has been designated as the Secretary of Energy's authorized representative to hold Materials License SNM-2504 and operate the FSV ISFSI in accordance with NRC requirements**
  - *Accordingly, DOE-ID will submit the License Renewal Application for the FSV ISFSI under the delegated authority*
- **Pending future guidance, DOE has reviewed and will base its application on the following precedent and guidance:**
  - *NUREG-1567, ISG-15, RIS 2007-09, and ASTM C 1562-03*
  - *Preliminary NRC Staff Guidance for 10 CFR Part 72 License Renewal, U. S. Nuclear Regulatory Commission, March 29, 2001 (Dominion Letter Serial No. 01-203)*
  - *Preliminary NRC Staff Guidance for 10 CFR Part 72 License Renewal, U. S. Nuclear Regulatory Commission, May 17, 2001 (CP&L Letter Serial No. RRA-01-0054)*
  - *Surry Independent Spent Fuel Storage Installation, Comments on NRC Preliminary Guidance, June 26, 2001 (Dominion Letter Serial No. 01-367)*

License Renewal Approach (continued)

- **DOE-ID staff has reviewed the following from the aspects of both precedent and lessons learned:**
  - *Virginia Electric and Power Company, Surry Independent Spent Fuel Storage Installation (ISFSI), License Renewal Application, Docket No. 72-2, License No. SNM-2501, April 29, 2002*
  - *H. B. Robinson Steam Electric Plant, Unit No. 2 Independent Spent Fuel Storage Installation, Docket No. 72-3, License No. SNM-2502, Request for Renewal of Independent Spent Fuel Storage Installation, February 27, 2004*
  - *Duke Power Company, LLC, Oconee Nuclear Station, Docket No. 72-4, License No. SNM-2503, Site-Specific Independent Spent Fuel Storage Installation (ISFSI) License Renewal Application, January 30, 2008*

Scoping Evaluation

- **SSCs Important to Safety that Remain Within Scope**
  - *Fuel Storage Containers (FSCs)*
  - *Fuel Storage Container Support Stools*
  - *Standby Storage Wells (SSWs)*
  - *Container Handling Machine (CHM) Raise/Lower Mechanism*
  - *CHM FSC Grapple*
  - *Charge Face Structural Steel*
  - *Cask Load/Unload Port (CLUP)*
  - *Spent Fuel in Storage*
- **Enhanced Quality Items (SSCs Not Important to Safety) Important to Operation of the Facility**
  - *Structural Concrete of the Modular Vault Dry Store (MVDS) Building*
  - *Concrete Fill Inside the Charge Face Structure*

Scoping Evaluation (continued)

- **Two SSCs currently Important to Safety no longer to remain within scope**
  - *CHM Individual Fuel Element (IFE) Grapple*
    - Repackaging of fuel assemblies is not authorized (SNM-2504, Condition 13), therefore IFE cannot be used
  - *FSV-1 Transfer Casks*
    - FSV-1 transfer casks (Certificate of Compliance No. 6346) no longer exist at FSV ISFSI and are not intended for associated future use
    - Replaced with two TN-FSV spent fuel shipping casks used, maintained, and stored in Idaho (Certificate of Compliance No. 9253)

Aging Management Reviews

- **No Aging Effects Identified that Could Impact Ability of SSCs (or Enhanced Quality Items) to Perform Intended Function During Requested License Renewal Period (analyzed for 50-year total license period)**
  - *Fuel Storage Containers*
  - *FSC Support Stools*
  - *CHM Raise/Lower Mechanism*
  - *CHM FSC Grapple*
  - *Charge Face Structure Structural Steel*
  - *CLUP*
  - *Fuel in Storage*
  - *Structural Concrete of the MVDS Building*
  - *Concrete Fill Inside the Charge Face Structure*

Aging Management Reviews (continued)

- **Some aging effects have been identified in the SSWs**
  - *Condensate pooling in bottom of SSWs*
  - *Mild to moderate corrosion on SSW interior walls*
  - *Primary area of interest is corrosion near weld between SSW shell and base forging*
  - *Extent of loss of material (interior wall thickness) due to corrosion is being evaluated (TLAA)*
  - *Primary area of interest is documented in a video inspection*
- **None of the above are currently anticipated to have credible potential to adversely impact the ability of an SSC to perform its intended function during the license renewal period**

Aging Management Activities/Programs

- **DOE has a routine Inspection and Maintenance Program for SSCs Important to Safety and Enhanced Quality Items Important to Operation**

- **Future inspection frequency for the Standby Storage Wells will be implemented per recommendation in TLAA**

Time-Limited Aging Analyses (TLAAs)

- **Fuel Storage Containers**
  - *Update existing corrosion analysis to accommodate extended duration of the license*
- **Standby Storage Wells**
  - *Update existing corrosion analysis to accommodate extended duration of the license*

License Basis Documents

- **Safety Analysis Report**
  - *Revised chapters scheduled for transmittal in biennial SAR Update Report in June 2009 (72.48 and 72.70) and as part of renewal application*
- **Decommissioning Plan**
  - *Revised to reflect new guidance (NUREG-1757)*
  - *Idaho Spent Fuel Facility Materials License SNM-2512 Decommissioning Plan used as template*
- **Other License Basis Documents**
  - *Technical Specifications and Bases*
  - *Emergency Plan*
  - *Environmental Report*

License Renewal Application Schedule

- **DOE Internal Review: June/July/August 2009**
- **Comment Resolution: September/October 2009**
- **License Renewal Application and Exemption Request Submittal: November 2009**
- **License Renewal: November 2011**

Summary

- **DOE-ID is on schedule to submit a 10 CFR 72 License Renewal Application and a 10 CFR 72.7 Request for Exemption from 10 CFR 72.44(a) in applying for an extended renewal term by November 2009.**
- **The License Renewal Application will incorporate the NRC Preliminary Guidance following precedent set by Surry, Robinson, and Oconee ISFSI License Renewal Applications.**
- **Two SSCs identified as Important to Safety in current license will not be within scope of Aging Management Review**

Summary (continued)

- **Except for Standby Storage Wells (SSWs), no aging effects have been identified that could affect ability of SSCs (or Enhanced Quality Items) to perform intended functions during license renewal period.**
- **SSWs have been cleaned and inspected, and extent of loss of material due to corrosion is being evaluated and documented.**
- **SSW internal environment will be managed in accordance with TLAA recommendations.**
- **Corrosion analyses are being updated (TLAAs).**
- **SAR and Decommissioning Plan will be updated.**

Questions/Comments?