



***LWR Fuel Rod Contents for
Transnuclear-Ft. St. Vrain (TN-FSV) Cask
(COC USA/9253/B(U)F-85)***

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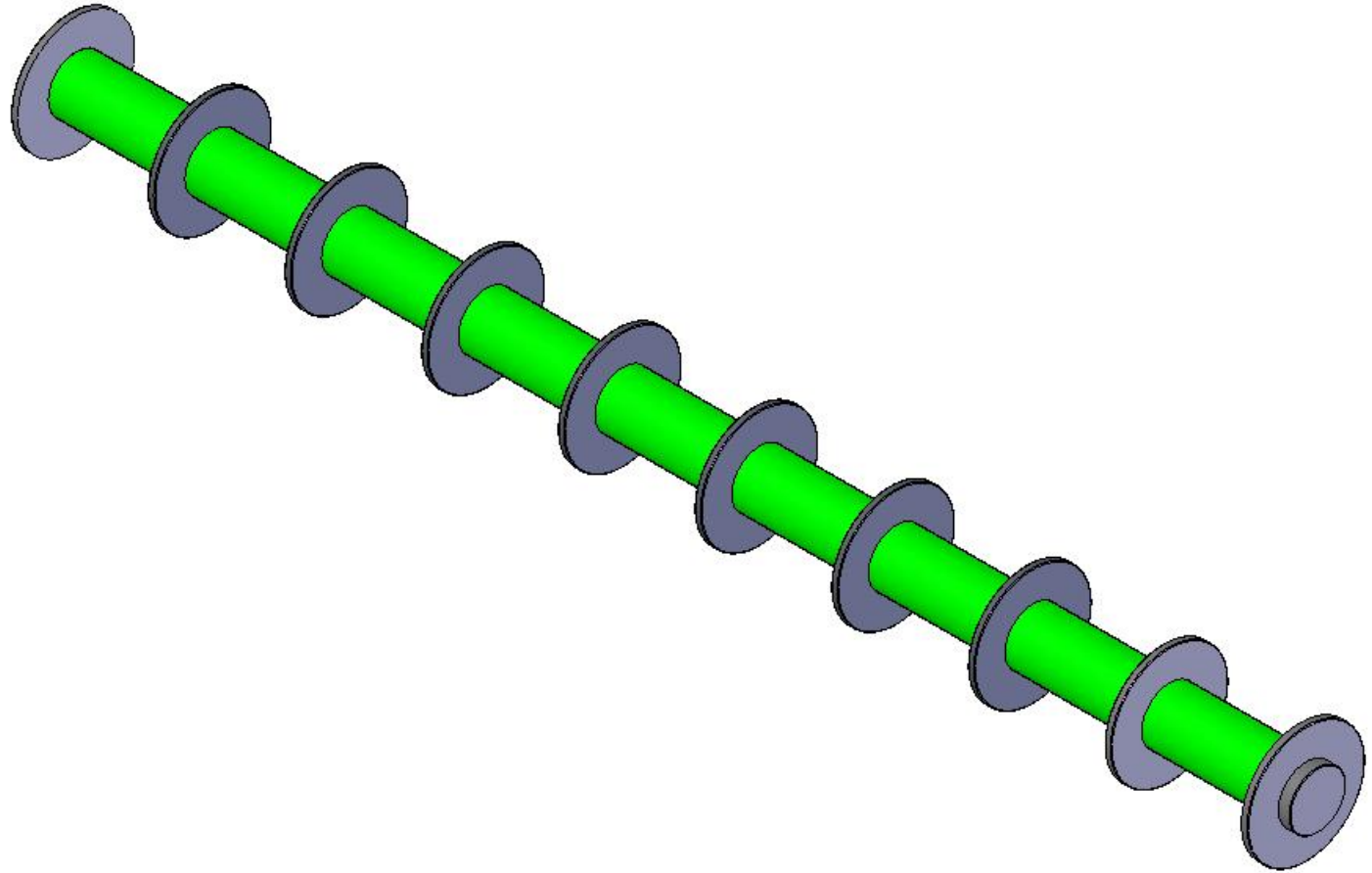
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- ▶ **Current TN-FSV Cask Authorized Contents:**
 - ◆ **HTGR Fuel Elements within fuel storage container (Configuration #1)**
 - ◆ **Irradiated Fuel Parts and/or intact Peach Bottom Unit 1 fuel elements within Oak Ridge Container (Configuration #2)**
- ▶ **Department of Energy's (DOE) Idaho National Laboratory (INL) frequently examines irradiated fuel rods and core materials**
 - ▶ **Transportation on a case-by-case basis**
 - ▶ **Limited number of cask options**

Proposed New Contents for TN-FSV

- ▶ **New internal lead-shielded canister**
- ▶ **4 PWR Fuel Rods**
 - ◆ 75 GWD/MTU burnup
 - ◆ 180 day cooling time
 - ◆ 350 W decay heat
- ▶ **2 BWR Fuel Rods**
 - ◆ 75 GWD/MTU burnup
 - ◆ 180 day cooling time
 - ◆ 300 W decay heat

Internal Shielded Container



▶ **New Internal Shielded Canister:**

- ◆ **304 SS inner and outer shells, each 1/4" thick**
- ◆ **4-1/2" I.D., 8-5/8" O.D.**
- ◆ **2" lead shielding on walls**
- ◆ **Four 1-1/2" diameter tubes**
- ◆ **Closure Shield plug is 6" thick 304 SS**

▶ **Preliminary Shielding Evaluation**

- ◆ **Bounding PWR source term used**
- ◆ **Cask Surface Dose Rate = 86 mrem/hr (200 mrem/hr limit)**
- ◆ **2 meter Dose Rate = 9.6 mrem/hr (10 mrem/hr limit)**

- ▶ **Maximum TN-FSV payload is 5000 pounds in COC #9253**
- ▶ **Empty Shielded Container:**
 - ◆ **Weighs approximately 4300 pounds**
 - ◆ **Leaves 700 pounds for contents, adequate for 4 fuel rods**
 - ◆ **Uses spacer disks to spread load along inner shell**
 - **1" thick, approximately 21" apart**
 - **Coincide with Oak Ridge Canister support disks**
- ▶ **Structural performance of TN-FSV with new canister is bounded by existing analysis**

- ▶ **COC allows up to 360 W of decay heat**
- ▶ **Proposed Contents have 350 W decay heat maximum in a similar distribution**
- ▶ **No change to thermal design basis**

Criticality Evaluation

- ▶ **Proposed contents can be demonstrated to remain subcritical without relying on container design**
- ▶ **New contents are within the safety envelope of the existing criticality evaluation**

Containment Evaluation

- ▶ **Configuration 1 leak rate criterion of 1×10^{-3} ref cc/sec adequate for intact fuel rods**
- ▶ **Fuel rod segments or damaged rods will require more containment**
 - ◆ **Configuration 2 “leak-tight” TN-FSV butyl seals**
 - ◆ **Will be overpacked into canisters**

- ▶ **Proposed changes are not significant with respect to:**
 - ◆ **TN-FSV Design**
 - ◆ **TN-FSV Operating Characteristics**
 - ◆ **Safe Performance of Containment System**
 - ◆ **Prevention of Criticality**
- ▶ **Modifications to Package satisfy 10 CFR 71 requirements**
- ▶ **Amendment to existing -85 COC**

Licensing Questions

- ▶ **Is an amendment to the existing -85 COC feasible or would an -96 application be required?**
- ▶ **If so, must fabrication of the inner shielded canister be completed by December 31, 2006?**

Discussion and Questions