HI-STORE CISF:
A Consolidated Interim Storage Facility for Used Nuclear Fuel in Southeast New Mexico

National Conference of State Legislatures
Nuclear Legislative Working Group
Spring Meeting

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June 4, 2019
Consolidated Interim Storage

Topics

✔ About Holtec International
✔ Nuclear Fuel and How it is Stored
✔ Consolidated Interim Storage
✔ HI-STORE: Holtec’s Consolidated Interim Storage Facility for Used Nuclear Fuel & High Level Waste (HLW)
✔ HI-STORE License Process & Status
✔ Transportation
About Holtec International

- Established in 1986
- Orders booked for future deliveries: 5.0 Billion USD+
- No history of long-term debt
- Highest industrial credit rating [D&B-1R2]
- Financially strong with self-financed R&D
- Largest exporter in US for capital equipment supporting the nuclear industry
- **116** nuclear plants worldwide: **65** domestic, **51** international
- Over **60,000** SNF assemblies loaded into Holtec Dry Cask Storage/Transport Systems
- **1,200+** Holtec supplied systems are loaded

Committed to the Nuclear Industry
Core Business Activities

- Safe & Secure Used Fuel Storage
- Heat Transfer Equipment
- SMR-160 Delivery
- Decommissioning of Retired Nuclear Plants
- Consolidated Interim Storage
Holtec’s Worldwide Dry Storage and Transport Experience

1,200+ Systems Loaded

116 Nuclear Plants Worldwide Rely on Holtec’s Dry Storage Technology for their Storage & Transport; 65 Domestic, 51 International
Holtec’s Manufacturing Capabilities
Three Major U.S. Manufacturing Plants

- Holtec Manufacturing Division (HMD)
  - Turtle Creek, PA
- Orrvilon, Inc. (ORR)
  - Orrville, Ohio
- Advanced Manufacturing Division (AMD)
  - Camden, NJ
- 1.4M ft$^2$ of Total Shop Space
Nuclear Fuel & How it is Stored
How Nuclear Fuel is Stored

Wet Storage Pool

Aboveground Dry Storage
HI-STORM
How Nuclear Fuel is Stored

Subsurface Dry Storage
HI-STORM UMAX
Storage Locations in the US
Consolidated Interim Storage

**Safe**: The spent fuel storage system is designed and built to withstand natural and man-made events with no release of radioactivity.

**Secure**: The spent fuel storage system and the facility provide an impregnable fortress for protecting the spent fuel against even the most egregious attacks.

**Retrievable**: Allows removal of used fuel canisters from the facility to the final repository in one shift.

**Temporary**: The canisters containing the spent nuclear fuel will be shipped off site to the DOE facility in the same manner they were shipped to the site.
HI-STORE CISF: A Consolidated Interim Storage Facility for Used Nuclear Fuel

- Holtec & ELEA Team – Public Private Partnership formed in 2016
- Eddy-Lea Energy Alliance
  - ✔ Long-standing NM alliance
  - ✔ Owners are:
    - Counties of Eddy & Lea
    - Cities of Carlsbad & Hobbs
  - ✔ Formed in 2006 under the NM Local Economic Development Act
- ELEA owns the property
- Holtec funding licensing and will operate the facility
- Robust scientific & nuclear workforce
  - ✔ WIPP
  - ✔ URENCO
Strong Local Support

- Strong support:
  - Local communities
  - State & Local government
- Letters from the Cities of Carlsbad and Hobbs
- Letters from Counties of Eddy and Lea
- Letter from former Governor of New Mexico
- Memorial Letters from House and Senate of New Mexico
- New Mexico State Radioactive & Hazardous Materials Committee
- Letter from City of Tatum
HI-STORE CISF Utilizes the HI-STORM UMAX Technology

- Maximizes safety & security
- Stores used nuclear fuel in strength-welded canisters in below ground vertical silos
- Produces no pollution
- Does not need any water, nor does it emit any water or any chemical
- It does not make any noise
- No aquifers or ground water will be affected
- The radiation dose at the site’s protected boundary will be a small fraction of the cosmic radiation that bathes the state every single day
HI-STORE Site Layout

- Initial Storage Capacity = 500 canisters (8,680 MTU)
- Total Storage Capacity = 10,000 canisters
- Facility utilizes 500 of the 1,000 acres available
- Operations could commence by 2023
Phase 1 – 500 HI-STORM UMAXs
Site Specific License Process & Status

**Safety**
- Holtec Submitted License Application
  - NRC Began Safety Review
    - NRC Issues Safety Evaluation Report

**Environment**
- NRC Accepted Application for Review
  - NRC Docketed License Application
    - NRC Began Environmental Review
      - NRC Issues Environmental Impact Statement
        - ASLB Issues Findings; NRC Issues License

**Legal**
- NRC Legal (ASLB)
HI-STORE Site-Specific License Timeline

- Application submitted to USNRC: March 2017
- Application accepted by USNRC: March 2018
- RAI #1 received 4 of 5 parts: various times in 2018
- Responded to Round #1 in 4 Parts: various times in 2018 & early 2019
- RAI #1 part 5 expected: TBD 2019
- RAI #2 (if needed): TBD
- NRC Expected to publish draft EIS: June 2019
  - ✔️ There will be at least a 45-day comment period on the Draft EIS
- NRC Expected to publish mid to late 2020
- NRC completes review: July 2020
HI-STORE Construction Timeline

- Pending Agreement w/DoE and/or Nuclear Utilities and / or other:
  - Construction Start: 2021
  - Construction Complete: 2023 - 2024
  - Accept First Shipment: 2023 - 2024
No. 1 Perceived Issue?

Industry has experience

- HI-STAR 190 is licensed for transport
  - High burnup fuel
  - Incorporates Part 72-71-72 requirements
  - Fabricated

- HI-STAR 100 is licensed for transport
  - Includes Humboldt Bay (HI-STAR HB)
  - Fabricated & in use for storage

- 8 & 12 axle rail car

- NEI Transportation Tabletop
Transport to HI-STORE CISF

- Spent nuclear fuel will arrive at the HI-STORE CISF by rail
  - Robust and safe transport casks using specialty designed railcars
- Transportation of radioactive material including Spent Nuclear Fuel is strictly regulated
  - The Nuclear Regulatory Commission (NRC) and the U.S. Department of Transportation (DOT)
- Two transport casks designed and licensed with the NRC by Holtec International will be used
  - HI-STAR 190 (licensed) and HI-STAR 100MB (pending)
Transport to HI-STORE CISF

There are two options for transporting the wide range of commercial SNF canister designs:

✔ Utilize the original transport cask that was approved for the canister
✔ Transport in a Holtec Transport Cask (HI-STAR 190 and HI-STAR 100MB)

Licensing non-Holtec canisters is not a technical issue for HI-STORM UMAX

✔ In process of licensing for MPC-37, MPC-89, and TN-24PT1
✔ For transport the canister is not the containment boundary
Transport to HI-STORE CISF

- Transport casks are designed and fabricated to safely confine the fuel and shield workers and the public from radiation
  - Multiple layers of steel, lead, and other materials
- Inside the cask, the used fuel, in solid form, is contained in another sealed canister
- Fully loaded casks weigh 125 tons or more for rail shipments

Holtec Transport Cask
Rail Access to HI-STORE CISF

- Location (distance) of the existing rail terminal from the site
  - 3.8 miles west Southwestern Railroad (SWR)
  - 32 miles east Texas-New Mexico Railroad

- The local area has a well-developed rail road infrastructure. The length of additional rail spur required for the site in less than 10 miles.

- The transportation rail car is transferred to a newly constructed rail spur located along State Highway 243, where the transportation casks remain on the rail car and are transported approximately 5 miles east to the HI-STORE CISF.
Transport of Spent Nuclear Fuel is Proven and Safe

According to a report prepared by Oak Ridge National Laboratory and Argonne National Laboratory (2016):

- More than 25,000 shipments of used nuclear fuel have been made worldwide, shipping more than 87,000 Metric Tons of Fuel.
- All shipments were undertaken without any injury or loss of life.

According to the NRC, more than 1,300 used fuel shipments have been completed safely in the United States over the past 35 years.

- Most of the used fuel was shipped by rail.
- All shipments were completed with no release of radioactivity.

The U.S. Navy reports that, over the past 60 years, it has completed nearly 850 shipments of used fuel from naval propulsion reactors, covering 1.6 million transportation miles.

- All shipments were completed with no release of radioactivity.
Questions?