

Used Nuclear Fuel

Interim Storage Topics for Panel Discussion

Presented to: National Nuclear Fuel
Security Summit

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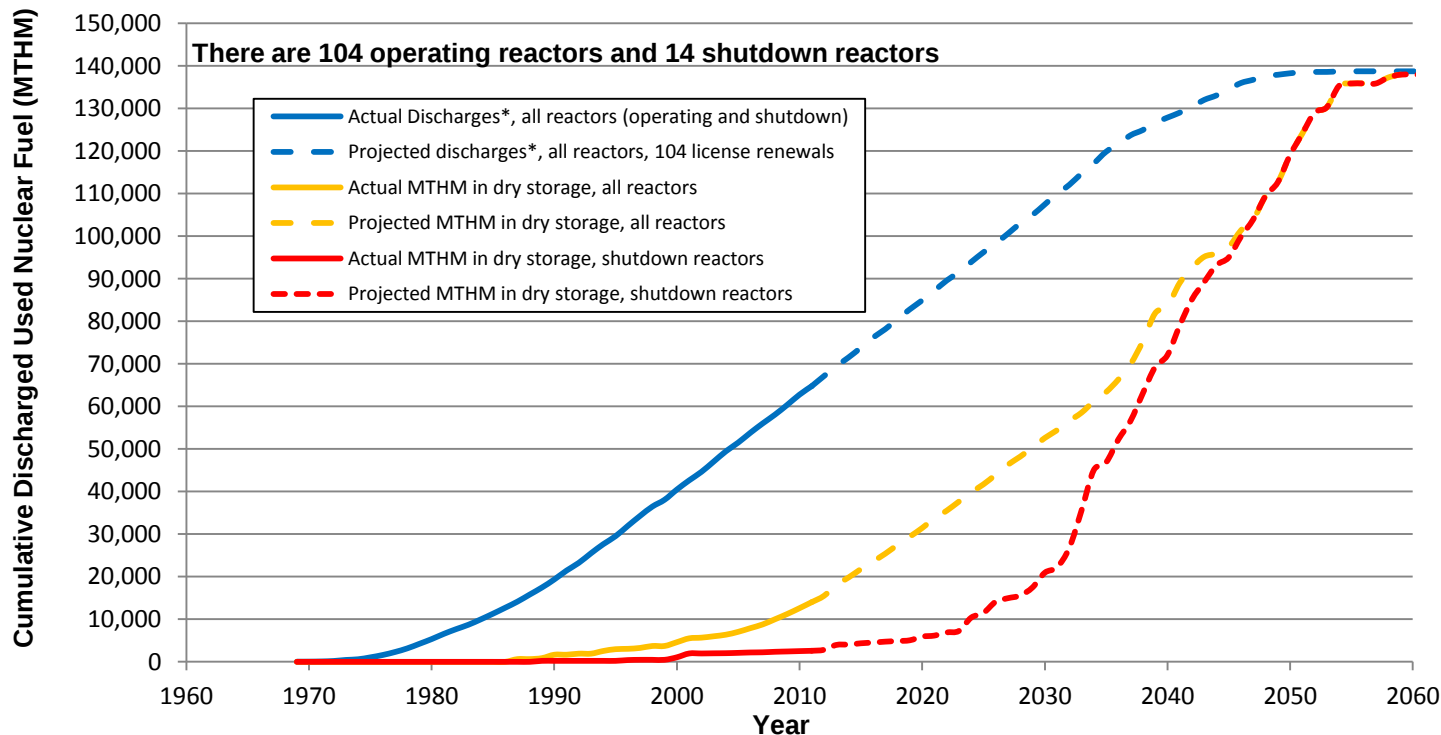


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Some context regarding used fuel interim storage

- Cancellation of Yucca Mountain Repository licensing activities will result in extended storage of used nuclear fuel.
- The Blue Ribbon Commission (BRC) was established to recommend a path forward for storage, transportation, and disposition of used nuclear fuel.
- Reactor operators moving to higher fuel burnups raises questions concerning fuel performance during storage and transport.
- Fukushima accident stresses importance of safety assurance for storage operations.



Source: *Based on actual discharge data as reported on RW-859 database through 12/31/02, and projected discharges, in this case for 104 license renewals

What issues arise from this situation?

- **Primary BRC recommendations**

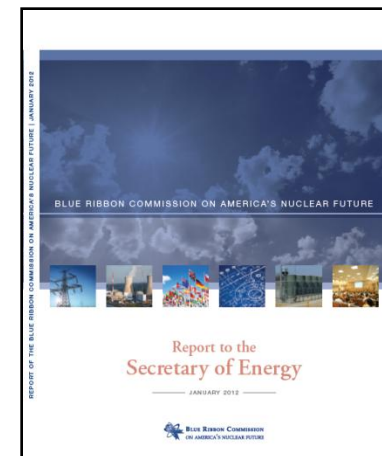
- Begin planning for consolidated storage
- Address transportation of high burnup fuel

- **Primary storage component degradation concerns**

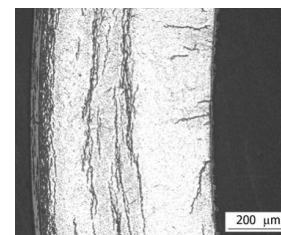
- Fuel/Cladding: hydride effects on cladding integrity
- Canister: corrosion/stress corrosion cracking
- Closure: bolt/seal relaxation and corrosion
- Concrete: general degradation over time

- **Primary cross-cutting issues**

- Thermal profiles of fuel
- Drying efficiencies
- Monitoring
- Fuel transfer capabilities (transport of dual purpose casks)
- Retrieval of used fuel after extended storage
- Transport of fuel after extended storage
- Subcriticality
- Standardization of canistered systems



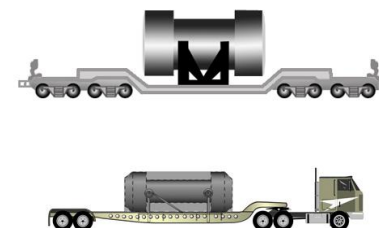
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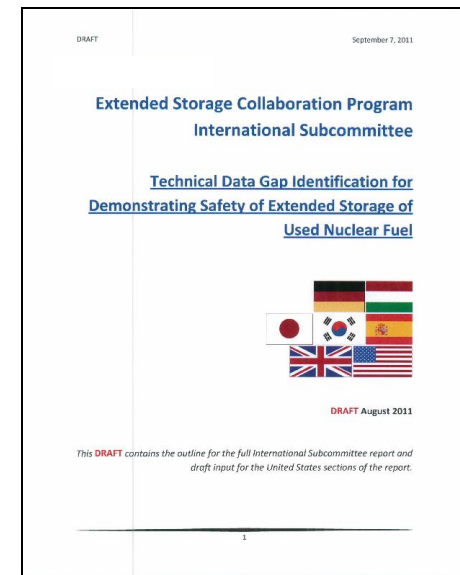


ANL Testing:
Inston 8511 test machine



Where is the work being done?

- **DOE Office of Nuclear Energy**
 - Used Fuel Disposition Program (UFD) conducting R&D
 - Advisory and Assistant Services contracts with industry
 - University grants – NEUP
- **Nuclear Regulatory Commission**
 - Technical data gap analysis for extended storage
 - Assessment of cask demonstration programs
 - Close collaboration with DOE and industry
- **Industry**
 - Operational storage sites with active life extension programs
 - Addressing high priority concerns related to extended storage:
 - canister corrosion
 - demonstration project
 - Leading organization to facilitate integration of industry, DOE, NRC, and international work:
 - EPRI Extended Storage Collaboration Program (ESCP)



Conclusions

- **There are specific issues that need to be addressed to support licensing of extended used fuel storage and subsequent transportation**
- **There needs to be commitment to conducting near-term separate effects testing as well as siting and operating a long-term confirmatory demonstration project**
- **There is good collaboration between industry, the regulator, and the DOE in defining the issues and working together to prioritize these issues recognizing limited resources**