As of: 11/23/15 1:22 PM
Received: November 20, 2015
Status: Pending_Post
Tracking No. 1jz-8mde-7t12
Comments Due: November 20, 2015
Submission Type: Web

PUBLIC SUBMISSION

Docket: NRC-2015-0051
Department of Energy; Yucca Mountain, Nye County, Nevada; Supplemental Environmental Impact Statement

Comment On: NRC-2015-0051-0004
Department of Energy; Yucca Mountain, Nye County, Nevada; Correction and Extension of Comment Period

Document: NRC-2015-0051-DRAFT-0129
Comment on FR Doc # 2015-23510

Submitter Information

8/21/2015
80 FR 50875

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General Comment

143

Docket ID NRC-2015-0051

Dear NRC,

As you know Yucca Mt. failed the original standards set forth for water flow through the mountain. Ironically perfect measuring device which was a new item not existing on planet earth until after the Trinity test creating a precise date and seeing how deep that item went into the mountain caused Yucca to fail. So the amount of allowed penetration was changed. That was not honest. Second, Yucca is not a Cheyenne mountain where you have rooms with multiple blast doors that can be closed off and tons of material put in front where in 1000 years you can reopen it and take robots in the fix problems. Yucca is just a dump hole packed up with waste and crushed rock, that's nuts.
HOW does NRC account for the inclusion of High-Burnup Fuel in the Yucca Mt post-closure impact analysis?

If NRC is not factoring High-Burnup fuel as waste, then it is not accurately assessing these factors, all of which impact the post-closure impacts:

Heat load (including over time);

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E-RIDS= ADM-03
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Source Term (ditto);

Mobility of radionuclides in the source-term profile.

If the amount of radioactivity, the type of radioactivity and its contribution to the heat issues are wrong, then the Total System Performance Assessment (TSPA) used to project the post-closure outcomes should be corrected and the Draft SEIS tabled until the TSPA is corrected.

High Burnup Nuclear Fuel
For high burnup fuel (HBF), the cladding surrounding nuclear fuel, is thinner, more brittle, with additional cracks. In a transportation accident, the cladding could shatter and a large inventory of radioactivity, particularly cesium, could be released. The NRC should stop use of HBF and make solving HBF storage problems one of its highest priorities.

High Burnup Fuel Problems
Almost all commercial reactors have HBF
The only issue NRC staff consider is the highest heat within a storage cask, but this ignores the fact that the cladding of HBF is thinner, more brittle, with additional cracks, as shown in Fig. 1. Longer cooling time will not solve these problems.
Uranium fuel pellets, stacked within long thin tubes called cladding, are struck by neutrons and fission, producing heat. A collection of these tubes is called a nuclear fuel assembly, shown in Fig. 2. After 3 to 4 years, extremely radioactive and thermally hot fuel assemblies are removed from the reactor and stored underwater in a fuel pool. Following a cooling period of 7 to 20 years, 24 to 32 fuel assemblies are removed from the fuel pool and inserted into a fuel canister, which are then pushed into a concrete overpack.

Here are the high burnup fuel issues:
HBF is dangerously unpredictable and unstable in storage - even short-term.
HBF is over twice as radioactive and over twice as hot. The higher the burnup rate and the higher the uranium enrichment, the more radioactive, hotter and unstable fuel and cladding become. Fig. 4 shows the increase of heat output of fuel assemblies as a function of burnup.

HBF requires a minimum of 7 to 20+ years of cooling in spent fuel pools before storage in dry casks. The years of cooling depends on the burnup rate, percent of uranium enrichment and other factors as defined in the dry cask system's technical specifications.[6] Lower burnup fuel requires a minimum of 5 years. See Fig. 5.
HBF requires more storage space between fuel assemblies due to the higher heat, higher radioactivity, and instability,[7] yet the NRC approves high density of fuel assemblies in fuel pools and dry casks systems. San Onofre requested use of a new dry cask system that crowds 32 fuel assemblies into the same space that currently holds 24.[8] Absent a comprehensive safety analysis, the NRC should NOT approve the NUHOMS 32PTH2 cask system for HBF, but is considering doing so this year. The NUHOMS system consists of a welded canister that holds 24 or 32 fuel assemblies; the canister slips inside a concrete storage overpack, shown in Fig.3. Diablo Canyon now uses a HOLTEC 32 fuel assembly cask system.
No transportation casks for HBF have been approved by the NRC,[9] so even if a waste repository were available, HBF could not be relocated.

HBF nuclear fuel is approved for only 20 years storage in dry casks, based on faulty assumptions about how HBF reacts in the first 20 years of storage.[10]
There is insufficient data to approve HBF in dry casks for over 20 years, per Dr. Robert Einziger, Senior Materials Scientist, NRC Division of Spent Fuel Storage and Transportation.[11] Experimental data show fuel

with burnup as low as 30 GWd/MTU have signs of premature failure.[12] As was done at Maine Yankee,[13] all HBF assemblies should be containerized in damaged fuel cans for dry storage.

Thank you for your serious consideration.
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