



NWTRB UNF Workshop November 18-19 2014

Comments from EnergySolutions

1. The Workshop was a valuable event with a good deal of detailed and high quality discussion of the two issues it was designed to discuss. These are (i) the repackaging of used nuclear fuel (UNF) from the large dual purpose canisters (DPCs) that it is increasingly being placed in by the nuclear power utilities and (ii) the possibility of disposing of these DPCs directly in a future geologic repository.
2. The workshop was intended to identify issues and not to develop solutions, and we believe it was largely successful in this aim.
3. However, our studies carried out for the DOE during 2012 and 2013 on proposed Consolidated Interim Stores for UNF and on the potential for using Standardized Transport, Aging and Disposal canisters (STADs) for UNF indicated to us that the issue of the ultimate geologic repository and its geology is absolutely central to any planning on how to deal with the nation's increasing amount of UNF.
4. In the absence of knowledge of the geologic properties of the repository and the likelihood of water ingress to it, it is not possible to define the maximum size of UNF canister that can safely be disposed of within it, for both heat transfer and criticality reasons.
5. In addition, it is a fact that the nuclear power utilities will continue to place UNF in dry storage using the largest canisters that are licensable. These large DPCs currently hold 37 PWR assemblies or 89 BWR assemblies. This is for completely rational commercial reasons of minimizing cost, worker dose uptake, and disruption in their pools. Because the nation has failed to follow through on the original NWPAs standard contract with the Utilities to take bare fuel from them, it is highly unlikely that the Utilities could be persuaded to use smaller canisters, even if we knew what size they should be.
6. To exacerbate the large canister issue, the Utility UNF pools at all operating stations are all now nearing capacity. This means that every year from now on the annual discharge of ~2000 tons of UNF will displace an equal amount of older UNF into dry store. Thus the ~15,000 tons (22% of the total UNF) currently in dry storage is now set to increase rapidly. The only way to mitigate this issue is for the Nation to revert to the original plan of taking bare fuel from the Utility pools.
7. We support the effort by the National Laboratories to study whether large DPCs can in fact be disposed of directly into a future repository. However, this is likely to be geology dependent or require very extended periods of above-ground storage (maybe 100+ years) before it becomes possible. A possible alternative of selecting the repository geology to be the most suitable for large DPCs is now ruled out by the consent based process that was recommended by the Blue Ribbon commission and accepted by the current Administration.
8. These considerations lead to the recognition, if current policies prevail, that a significant amount of repackaging of UNF from large DPCs to repository-friendly canisters will be required, once a repository site is identified and characterized. This will be a long, cumbersome, expensive and worker dose uptake-imposing task. The emptied large DPCs will also impose an additional disposal problem. It is thus in everyone's interest to minimize the extent of this repackaging process as much as possible.



9. This leads to 2 major conclusions:
- a. It is clear that it is technically feasible to develop a standardized transport, aging and disposal canister for all future discharged UNF, and the use of such a STAD would obviate a significant amount of the repackaging of the UNF currently being placed in very large canisters by the power utilities. However, the lack of a specific selected site for a repository, and thus knowledge of its geology and heat removal capabilities, makes it technically impossible to provide the specifics of the STAD design unless the smallest possible STAD is selected. The urgency of selecting a repository site is thus highlighted.
 - b. We support the current R&D work at the National Laboratories that is seeking to show that the large UNF canisters currently being used by the power utilities can be emplaced in most, if not all, repository geologies. Even partial success in this work will enable the avoidance of repackaging of at least some already canisterized UNF. Additionally, if a consolidated store for UNF is built and equipped with the maximum amount of pool storage possible, this would open up the ability to take bare fuel from reactor pools (as originally defined under the standard contract) and only place it in STADs when the size of these can be defined. The urgency of building a consolidated store is thus highlighted.

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