Used Fuel Disposition Campaign

DOE Spent Fuel Storage and Transportation Research Activities

Roundtable Discussion

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Used Fuel Disposition

Gap Analysis to Support Extended Storage of UNF FCRD-USED-2011-000136

Gap	Priority	Gap	Priority
1. Thermal Profiles	1	14. Neutron poisons – Thermal aging	7
2. Stress Profiles	1	15. Moderator Exclusion	8
3. Monitoring – External	2	16. Cladding – Delayed Hydride Cracking	9
4. Welded canister – Atmospheric corrosion	2	17. Examination of the fuel at the INL	10
5. Fuel Transfer Options	3	18. Cladding – Creep	11
6. Monitoring – Internal	4	19. Fuel Assembly Hardware – SCC	11
7. Welded canister – Aqueous corrosion	5	20. Neutron poisons – Embrittlement	11
8. Bolted casks – Fatigue of seals & bolts	5	21. Cladding – Annealing of radiation damage	12
9. Bolted casks – Atmospheric corrosion	5	22. Cladding – Oxidation	13
10. Bolted casks – Aqueous corrosion	5	23. Neutron poisons – Creep	13
11. Drying Issues	6	24. Neutron poisons – Corrosion	13
12. Burnup Credit	7	25. Overpack – Freeze-thaw	14
13. Cladding – Hydride reorientation	7	26. Overpack – Corrosion of embedded steel	14

Gap	Research Topic(s)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
HBU Spent Fuel Data Project (1, 2, 6, 11, 13, 16, 18, 19, 21, 22)	Technical Support to DOE, Selection of Assemblies, Selection of Sister Pins, Comprehensive Thermal Analysis, Development of the Sister Pin Test Plan										
Cladding- Hydride Reorientation (13)	Ring Compression Tests to assess ductility and to identify the Ductile to Brittle Transition Temperatures of High Burn-Up Cladding										
	Rod Stiffness, Pellet-to-Pellet and Pellet-to-Clad Interaction, Fatigue Testing										
	High Burn-Up Fuel Data Analysis and Modeling										
Stress Profiles (2)	Rod Stiffness, Pellet-to-Pellet and Clad Interaction, Fatigue Testing										
	Normal Conditions of Transport Load Testing										
	Data Analysis and Modeling										
Thermal Profiles (1)	Thermal Analysis on In-Service Dry Storage Canisters										
Canister Atmospheric Corrosion (SSC) (4, 9)	Environmenal Sampling from In-Service Dry Storage Casks										
	Uncertainty Quantification and Modeling										
	SCC Inspection and Evaluation of Canister in Dry Storage										
	Dwell Time and Crack Growth Rate Testing										
	Multi-Sensor Inspection and Robotic Systems for Dry Storage Casks										
	SCC Inspection and Evaluation of Canister in Dry Storage										
Monitoring - Internal (6)	Multimodal Nondestructive Dry Cask Basket Structure and Spent Fuel Evaluation										
Drying (11)	Experimental Determination and Modeling of Drying by Vacuum and Gas Circulation for Dry Cask Storage (USC)										
Cask Bolt and Seal Fatigue (5)	Collaboration with BAM on Seal and Bolt Ageing										