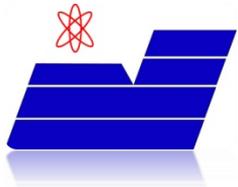


Low-Level Waste Streams from Nuclear Power Plants Including GTCC Waste Streams

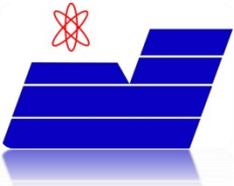


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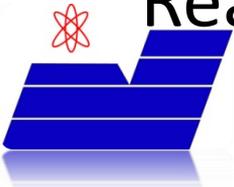
Primary Waste Streams During Operation/Decommissioning

- Process Waste Streams
 - Resins (Primarily Operations, Legacy at Decommissioning)
 - Filters (Primarily Operations, Legacy at Decommissioning)
 - DAW (Operations and Decommissioning)
 - Contaminated Items (Operations and Decommissioning)
 - Building Rubble (Decommissioning)
- Activated Metals
 - Consumable Hardware & Instrumentation (Primarily Operations, Legacy at Decommissioning)
 - Reactor Vessel and Internals (Decommissioning)



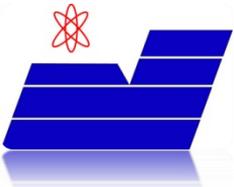
GTCC Waste Streams From Commercial Reactors

- **Activated Metal Components**
 - Mostly long-term core items in BWR's and fuel assembly hardware in PWR's
- **Instrumentation**
 - Fission chambers with Special Nuclear Material 'orphaned' from component
- **Reactor Vessel Internals at Decommissioning.**
 - Core region only
- **Cartridge Filters**
 - Reactor coolant filters from some PWR's
- **Not Likely GTCC from Resins or Other Blendable Waste**
- **DOE Estimates of Volumes are Conservative but Reasonable**



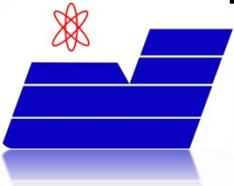
Isotopes of Concern

- Average Concentrations in Class C Hardware
 - ^{94}Nb - 0.09 Ci/m³ (Class C fraction of 0.47) (Note: ^{94}Nb activity in stainless steel is based on inadequate data; likely overestimated)
 - ^{59}Ni – 20.4 Ci/m³ (Class C fraction of 0.09)
 - ^{63}Ni - 3114.7 Ci/m³ (Class C fraction of 0.44)
 - ^{14}C - 4.6 Ci/m³ (Class C fraction of 0.06)
- Individual Components within a Factor of 2 or 10 of the Class Limit
- Significant TRU Concentrations Occur Only With Significant Fuel Defects
 - Not typical of commercial reactor waste



GTCC Waste Compared to Class C

- GTCC Stainless Steel from Core Regions
 - §61.55 Table 1 Fraction up to 18
 - §61.55 Table 2 Fraction up to 16
 - Not Significantly Different from LLW
- GTCC Waste from Other Metals
 - Principally specialty metals with constituent concentrations of Nb up to §61.55 Table 1 Fraction of 28
 - Small volume, mostly fuel assembly hardware
- Cartridge Filters
 - §61.55 Table 1 Fraction up to 83 (§61.55 Table 2 Class C)
 - Classification controlling radionuclides are ^{99}Tc and ^{14}C and likely to be significantly overestimated



GTCC Disposal

- Most GTCC Waste from Commercial Reactors is Similar to Class C Waste
 - Same materials
 - Higher activity
- Isotopes Driving Classification are Mostly Shorter Half Life
 - ^{63}Ni $t^{1/2} \approx 100$ years (^{94}Nb overestimated)
- Disposal of Commercial GTCC Waste in a Near-Surface Facility is Feasible

