

FB-Line Deactivation

Presented by:
Robbie Black

FB-Line Deactivation

- In operation since early 1960s
 - Received dilute Plutonium solution from the canyon
 - Process concentrated solution, precipitated Pu out of solution, and converted to metal
 - Produced 35% of nations weapons grade plutonium
 - De-inventory completed February, 2005

FB-Line Deactivation

- PUREX process completed March, 2002
 - The end of metal conversion in FB-Line
 - Process systems drained and depressurized
 - Process systems in “layup” status
- Deactivation started in January, 2004
 - Level 6 systems first
 - Packaging and stabilization continues

FB-Line Deactivation

- Deactivation requirement for gloveboxes and process areas
 - Remove hazardous materials
 - Remove combustible materials
 - Drain residual liquid in system at low points by:
 - Valve
 - Flange
 - Physical break (cut or tap)

FB-Line Deactivation

- Why is the task so challenging?
 - Gloveboxes/process cabinets contaminated to $>1E7$ dpm/100cm² alpha
 - Cabinet gloves not always available
 - Congested spaces difficult to access with cutting tools
 - The need to maintain an additional barrier between the worker and the contamination

FB-Line Deactivation

Flexible Panels

- Positives
 - Replaces installed lexan panels
 - Maintains barrier between worker and contamination
 - Complete containment
 - Available through Containment Fabrication Facility
 - Material cost low
- Negatives
 - Difficult to use in conjunction with air supplied plastic suits
 - Requires additional panel handling
 - Generates additional waste

FB-Line Deactivation

Passive Aerosol Generator

- Positives
 - Significant reduction in airborne radioactivity
 - Simple operation
 - Allows worker access through open panel
- Negatives
 - Surface deposition difficult to predict in active (ventilated) cabinets
 - Potential to mask contamination during future surveys

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One Success Story

- D-1 Dissolver Cabinet
 - Reduced cabinet exhaust to minimum
 - Introduced Encapsulation Technologies Glycerin Solution (ETGS)
 - Low level contamination ($\sim 8E3$ dpm/100cm²) detected during lexan panel removal
 - Direct instrument surveys show no detectable contamination
 - Smear of exterior of open flange inside cabinet detects $1E7$ dpm/100cm² alpha
 - Airborne radioactivity inside containment 56 DAC-hr or <3% of Suspension Guide Limit work inside the containment