

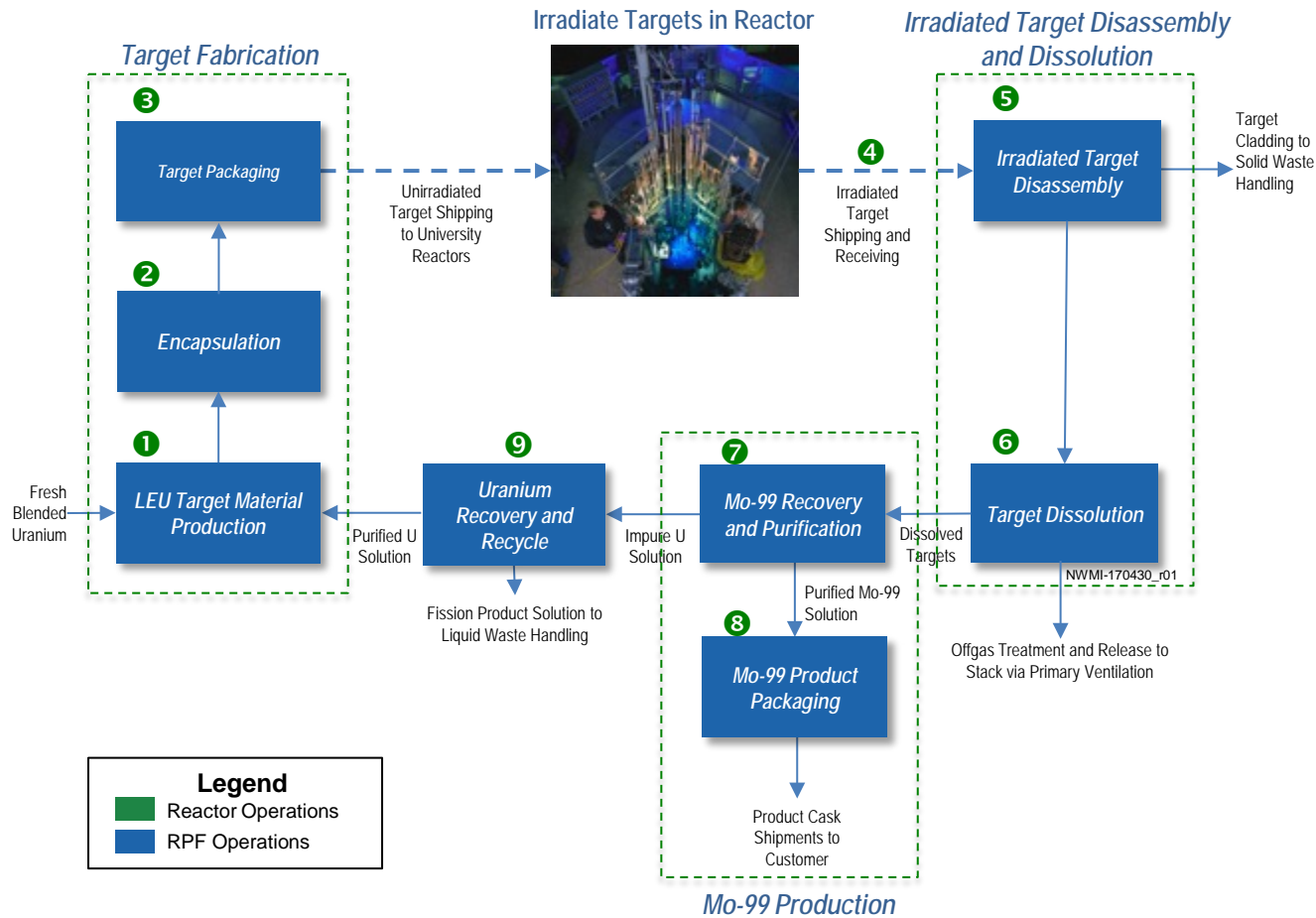
Northwest Medical Isotopes, LLC Recycled Processed LEU for Reuse as Target Material



Opportunities and Approaches for Supplying Molybdenum-99 and Associated Medical Isotopes to Global Markets

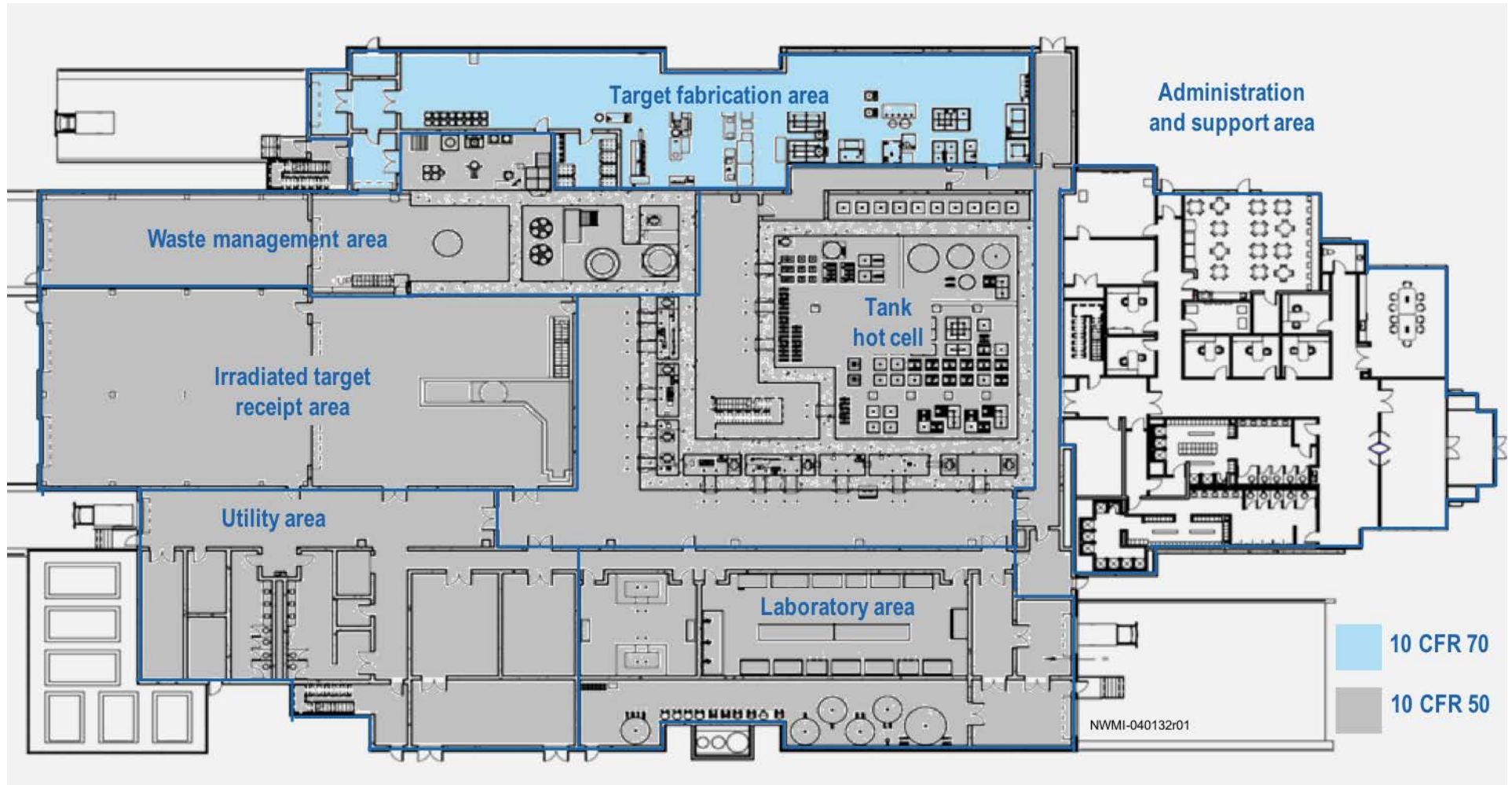
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RPF Process Flow Diagram



- 1 LEU target material is fabricated (both fresh LEU and recycled U)
- 2 LEU target material encapsulated using metal cladding → LEU target
- 3 LEU targets are packaged and shipped to university reactors for irradiation
- 4 After irradiation, targets are shipped back to RPF
- 5 Irradiated LEU targets disassembled
- 6 Irradiated LEU targets dissolved into a solution for processing
- 7 Dissolved LEU solution is processed to recover and purify Mo-99
- 8 Purified Mo-99 is packaged/shipped to a radiopharmaceutical distributor
- 9 LEU solution is treated to recover U and is recycled back to Step 1

Radioisotope Production Facility Layout



Uranium Recovery and Recycle Summary (Step 9)

➤ 1st Stage U Recovery

1. 1st stage Mo-99 IX column LEU stream is held in lag storage tanks to allow decay of select radionuclides
2. Decayed U solution is diluted and pumped through 1st stage IX columns to separate bulk fission product contaminants
3. U is eluted from IX columns, and concentrator/condenser is then used to concentrate eluate for 2nd stage IX U recovery

Waste (from step 2) is sampled and sent to high-dose liquid waste accumulation tank

Condensate is sent to low-dose liquid waste accumulation tank

➤ 2nd Stage U Recovery

1. Interim U product solution is processed through a 2nd stage IX column to remove trace contaminants
2. U is eluted from the IX columns, and a concentrator/condenser is used to control volume of recycled U product
3. Final U product solution is sampled to confirm that it meets recycle specifications

Waste is sampled and sent to the high-dose liquid waste accumulation tank

Condensate is sent to low-dose liquid waste accumulation tank

- Product U lag storage → Allows for ²³⁷U decay in U product solutions to contact-handled levels, then returned to target fabrication system

Questions?

