Initial PEP II Radioactive Waste Disposal Estimate

Olga Ligeti
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PEP II Decommissioning and Disposal Plan

- FY09
  - Minimally operating state
- FY10- FY15
  - Component item incorporation into current and future projects
  - PEP II site sampling analysis plan
  - Complete site and component sampling and characterization
  - Official request for proposals for D & D
- FY15
  - Award D&D contracts
  - Waste processing and disposal begins
PEP II DIMENSIONS

- **Ring**
  - 7250 feet length
  - 12 feet width
  - 12 feet height

- **Injector lines**
  - 1100 feet length
  - 12 feet width
  - 12 feet height
PEP II DIMENSIONS II

- Potentially activated concrete and soil areas

<table>
<thead>
<tr>
<th>Area Location</th>
<th>Length (ft)</th>
<th>Width (ft)</th>
<th>Depth (ft)</th>
<th>Sides</th>
</tr>
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<tbody>
<tr>
<td>IR 2 Area (1)</td>
<td>50</td>
<td>10</td>
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<td>IR 2 Area (2)</td>
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<tr>
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<td>IR 6 Collimator</td>
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<tr>
<td>IR 8 LER Dump</td>
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<td>6</td>
<td>4</td>
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<td>IR 10 HER Dump</td>
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<td>IR 12 Collimator</td>
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</table>
ASSUMPTIONS

- D&D will meet EPA and Stanford University requirements
- D&D will follow DOE guidelines
- Conducted in accordance with current SLAC protocols
- Decommissioning Contractor will support waste packaging and loading operations
REQUIREMENTS

- **Pre – Decommissioning**

  - Approved Sampling Analysis Plan (SAP), characterization, release criteria, and clean up levels.

  - MSDS or analytical results for all radioactive painted items to prove paint is non-hazardous

  - Tunnel concrete and soil from ceiling, walls and floor are sampled and characterized according to the SAP.
REQUIREMENTS II

- Decommission

- Radiological characterization of waste beam line components and supports is performed as the items are removed, prior to packaging.

- All mixed wastes must be shipped within 90-days of generation.

- All personnel performing packaging and shipping functions shall possess appropriate Certified DOT training.
REQUIREMENTS III

Post Decommission

- Clean up levels verified and documented.

- Continue shipping mixed wastes within 90-days of generation.

- Ship radioactive waste within one year of generation.

- All personnel performing packaging and shipping functions shall possess appropriate Certified DOT training.
Radioactive Waste Volume

Determination Basis

- FFTB preservation model
  - Soil expansion ratio
  - Twice the volume of components than at FFTB (site specific knowledge)
  - Re-use and salvage hold items also in 2X proportionality
EQUIPMENT DENSITY FFTB
EQUIPMENT DENSITY PEP II
FFTB EXPERIENCE - CABLES
PROPORTIONAL ESTIMATES

EQUIPMENT VOLUME

- Low Level Waste (components/support structure)
  - 103,675 cubic feet
- Low Level Mixed Waste
  - 8,967 cubic feet
MORATORIUM & SUSPENSION METALS

- EXCLUDED

- Status change may affect volume of materials handled as waste

- Affects future storage management decisions
  - Limited on site storage locations
PROPORTIONAL ESTIMATES

CONCRETE & SOIL VOLUME

- Low Level Waste (areas identified on slide 4)
  - 136,000 cubic feet

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<td>IR 12 Collimator</td>
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FFT B SUCCESS

- 17,874 cuft
- 92 Lift Liners
- 34 Truckloads
- 3 WEEKS
PERSONNEL TIME

■ Determination Basis
  ■ FFTB personnel needs and LLNL legacy waste project personnel usage
    ■ Process mixed waste out within 90-days of generation
    ■ Process radioactive waste as generated for 12 months
    ■ 100% personnel effort allocated to project.
    ■ Waste packaging and loading support provided by D&D contractor.
  ■ 54,080 hrs of coordinators/professionals
  ■ 110,240 hrs of technicians
LOGISTICS

- **Determination Basis**
  - 15 yrs Experience
    - Containers
      - Lift Liners (used at FFTB – soil/concrete)
      - Custom Wraps (currently using for oversize items)
      - Standard waste boxes (Type A – higher dose rate items)
  - Transport
    - Trucking
COSTS

- **Determination Basis**
  - Pricing calculation performed using FY07 dollars
  - Personnel costs calculated using current contractor pricing quotes.
  - Radioactive waste disposal costs calculated using current DOE contract pricing for disposal at EnergySolutions.
    - Current contracts expire soon and no new terms are known
  - Container and transportation costs also calculated using current pricing quotes.
ESTIMATE EXCLUSIONS

- **Personnel, Costs, and time associated with:**
  - Site characterization as required by EPA, DOE D&D guidance
  - Dismantling, removal of components, demolition and excavation
  - Management of currently unidentified waste items without a path for disposal or requiring special handling, such as:
    - Lead encased sources
    - Reactive mixed wastes
  - Management of Hold Materials
  - Management of Hazardous Wastes
ESTIMATE TOTAL

<table>
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<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>COST</th>
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<tr>
<td>SHIPPING COORDINATOR</td>
<td>54,080 hrs</td>
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<tr>
<td>TECHNICIAN</td>
<td>110,240 hrs</td>
<td>$10.6 M</td>
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<tr>
<td>LOW LEVEL WASTE DISPOSAL</td>
<td>239,675 ft³</td>
<td>$8.25 M *</td>
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<tr>
<td>MIXED WASTE DISPOSAL</td>
<td>8,967 ft³</td>
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<td>TRANSPORTATION</td>
<td>530 trucks</td>
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<tr>
<td>PACKAGING</td>
<td>1010 units</td>
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ASTERISK ITEMS

Disposal costs could increase by a factor of 10 based on the following:

- waste characterization shows additional mixed waste volumes
- Site characterization shows activation under greater area of tunnel
- waste minimization efforts are not used
FURTHER EVALUATION

- Obtain cost estimates for Sampling analysis plan development.
- Obtain cost estimates for site sampling and characterization.
- Develop cost estimate for Hazardous Waste management based on results of site characterization.
- Develop cost estimate for storing Hold materials on site.