WIPP and Surplus Plutonium

National Academy of Sciences
Surplus Plutonium Disposal Committee
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Don Hancock
Southwest Research and Information Center

Briefly Discuss

- WIPP's Mission
- Multiple Repositories are necessary
- WIPP is not fully fulfilling its mission
- WIPP Permit Requirements/TSDF-WAC
- Classified Shapes
- Dilute and Dispose Questions
- Conclusions
- Recommendations

WIPP's Mission

- "Start Clean, Stay Clean" to dispose of up to 175,564 m^3 of defense transuranic (TRU) waste
- Safely transport waste by truck through more than 20 states without serious accidents or releases
- Safely clean up TRU waste at DOE sites
- Safely close, decontaminate, and decommission the WIPP site beginning in about 2030 or earlier

WIPP's Mission is not

- Storage, transportation, disposal of any defense high-level waste
- Storage, transportation, disposal of any spent nuclear fuel
- Storage, transportation, disposal of any commercial waste
- Storage, transportation, disposal of 34 metric tons+ of surplus plutonium

Other repositories are necessary for legal and technical reasons

- WIPP 1979, 1992, 1996 laws
- Nuclear Waste Policy Act of 1982 & 1987
- Multiple sites needed, should be viable
- Reduce transportation risks and costs

- No state is willing to have the only repository

WIPP is not fulfilling its Mission

- WIPP forfeited 20,000+ cubic meters of CH underground capacity before February 2014
- Will forfeit 10,000+ cubic meters more CH capacity in Panel 7
- In eight panels will dispose of < 50% of RH capacity
- Well behind schedule/over budget before 2014
- Did not “Start Clean/Stay Clean”

WIPP Permit Requirements

- Citizen/State Actions made possible
- Legally enforceable
- Public participation
- Technical requirements

  Treatment, Storage, and Disposal Facility Waste Acceptance Criteria (**TSDF-WAC**)
- "all TRU waste is managed as though it were mixed."
- No international inspection/verification

TSDF-WAC (Sec. 2.3.3)

- Liquids limitations
- No pyrophoric materials
- No chemical incompatibility
- No non-mixed hazardous waste
- No explosives or compressed gases
- Limited PCB waste
- No ignitable, corrosive, or reactive wastes
- No HLW tank wastes
- No unconfirmed waste
- Approved waste stream profile form

Classified Shapes

- 11/25/2002 NMED approved Class 2 Modification to allow Rocky Flats classified shapes
- Radiography tapes of classified shapes are not at WIPP (Sec. 2.14.1; C1-1)
- NMED personnel with clearance can audit and view radiography tapes
- Radiography data records not classified

Dilute and Dispose Questions

- Comply with all TSDF-WAC requirements?
- What is inert material or “Stardust”?
- What classification requirements?
- What packaging?
- What audit/surveillance requirements?
- What operational changes?
- What security changes?

Other Dilute and Dispose at WIPP Requirements

- Additional NEPA document(s)
- Performance Assessment public process before decisions
- Agreements with State of South Carolina
- International inspections
- Federal law(s) changes
- Transportation improvements, training

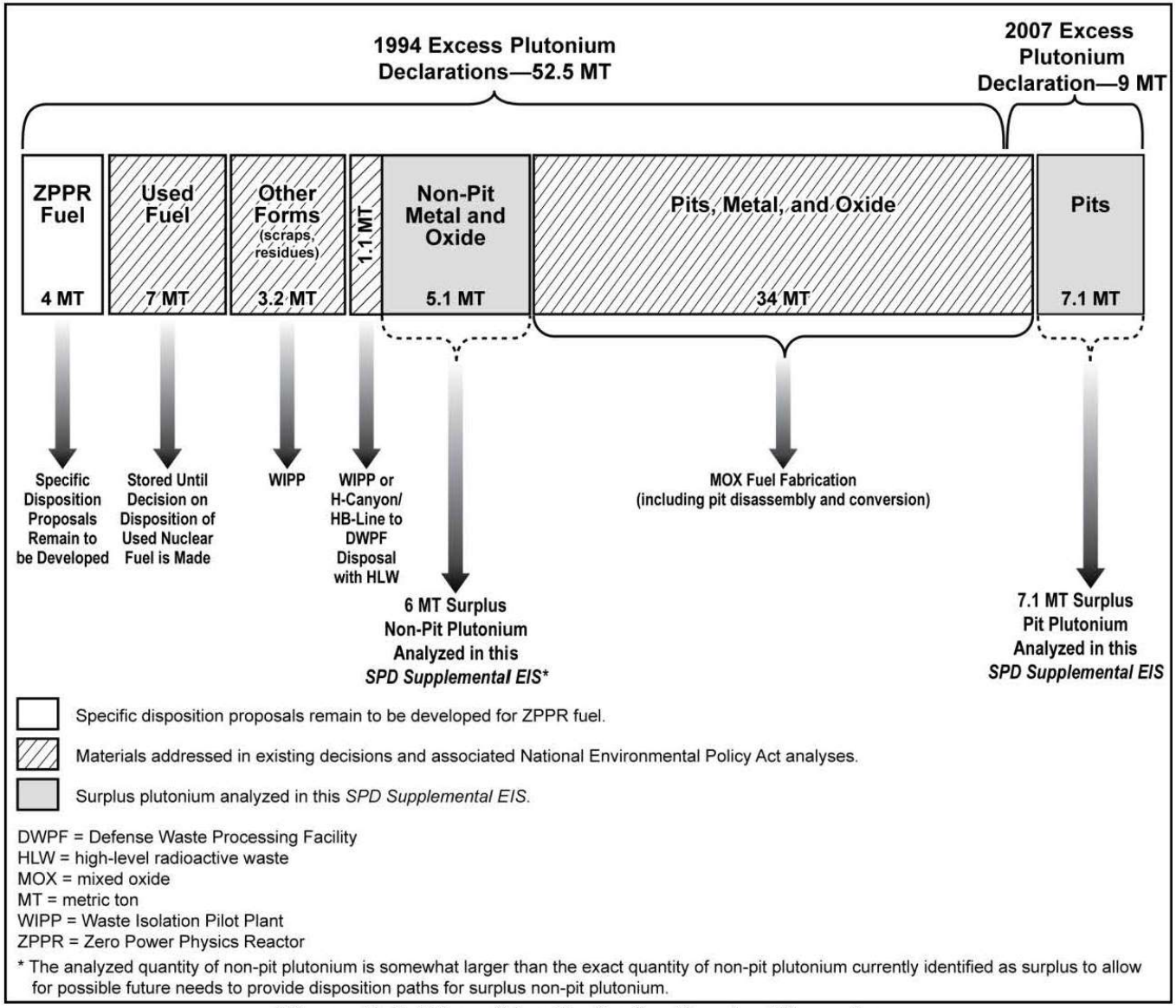

Figure S–7 Disposition Paths for Surplus Plutonium

The majority of Surplus Plutonium is in pit form and not at SRS.

Final Surplus Plutonium Disposition Supplemental Environmental Impact Statement (Summary). DOE/EIS-0283-S2. April 2015, p. S-9.

Conclusions

- WIPP has not fulfilled all of its existing mission
- Relying on WIPP for all surplus plutonium disposal is unlikely to be successful
- Large amounts of surplus plutonium require major changes WIPP laws & agreements
- Large amounts of surplus plutonium require significant modifications to the WIPP permit, which take years and might not be approved.
- Storage in and agreements with South Carolina and international inspections must be addressed

Recommendations

- Consider options to put surplus plutonium in forms that can be safely and securely stored and inspected
- Consider the option of disposal of surplus plutonium in future repositories, not WIPP
- Acknowledge the 61.5 MT of excess plutonium
- Address South Carolina's concerns about plutonium storage

Recommendations

- Consider options for international inspection and monitoring
- Include additional technical information about the characteristics of the inert material / “Stardust”
- Recognize that there are options for GTCC and tank wastes other than WIPP

Contact Information

Don Hancock
Southwest Research and Information Center
PO Box 4524
Albuquerque, NM 87196-4524
(505) 262-1862
(505) 262-1864 (fax)
sricdon@earthlink.net
www.sric.org