Recommendation No. 97

September 28, 1999

The Shipment Of Pu-238 Wastes To The Waste Isolation Pilot Plant

Background

The first shipment of non-mixed plutonium-bearing waste (also known as transuranic or TRU waste for the radionuclides with atomic number higher than uranium) arrived safely at the Waste Isolation Pilot Plant (WIPP) on March 26, 1999 from the Los Alamos National Laboratory (LANL) site in New Mexico. It represented a major milestone for DOE that marks the beginning of operations to dispose of the nation's stream of defense wastes. SRS is now preparing to begin shipping its TRU waste to WIPP. The first shipment is scheduled to leave SRS in the first quarter of calendar year 2000. The WIPP DOE Carlsbad Area Office initiated an audit of SRS facilities and operations in August 1999. Once it and another audit by EPA are passed, SRS will be ready to "Ship to WIPP", a major goal for DOE and the CAB.

In preparing SRS TRU waste for shipment to WIPP, the retrieval of all TRU waste drums (8,794 drums) buried under SRS soil in interim storage was completed on August 24, 1999. The drums were in good physical condition even though they had been buried for 20 years or more (only 113 required overpacking). Each drum was vented and the gas space purged to reduce the hydrogen gas within each drum (hydrogen comes from the radiolytic breakdown of the organic packaging materials within the drums). While hydrogen was found, no oxygen was discovered, indicating that no explosion could have occurred within the drums. The retrieved drums have been stored in a weather protective storage facility awaiting further preparations for shipment to WIPP. Encouraged by the Board, this work was completed three years earlier than scheduled, no contamination of workers or facilities, no physical injuries, and radiation exposures remained within safe limits. The CAB congratulates SRS for a job well done.

Yet to be resolved, however, is the shipment of high activity TRU wastes (primarily Pu-238). For some time, DOE has had a program to improve the shipping package and to revise the criteria to ship this waste. Although work is proceeding on enhancing the transport system, its slow progress is impacting the schedule to submit Safety Analyses Report (SAR) revisions to the Nuclear Regulatory Commission (NRC). Because revisions of the transportation rules must be aligned with whatever new shipping criteria result, a late decision may require SRS to construct a facility to treat its high-activity TRU waste.

The SRS CAB has written a series of recommendations encouraging DOE to address the high activity TRU wastes at SRS. SRS has the largest inventory of high-activity wastes in DOE, and because there is no disposition path clearly identified, they remain the greatest threat to the safety of the environment and the public near SRS. Without a treatment path, the wastes may be left at SRS, which will require a costly disposal plan that may not be approved by the State of SC (an agreement to remove TRU wastes from SRS was signed by the Governor of South Carolina and the Secretary of Energy on September 10, 1999). In the past, DOE urged the CAB to wait until the opening of WIPP before the CAB recommended to DOE that it either work through the NRC in order to change the transportation regulations to permit a more practical quantity of Pu-238 to be shipped to WIPP, or prepare to treat the high-activity TRU wastes to meet current shipping rules.

Recommendation

Now that WIPP has opened, at this time, the CAB formally recommends that DOE:

1. Expedite the TRUPACT II SAR revision submittals to the NRC and urge NRC to provide timely review and approval. Provide to the CAB in six months (March 2000) a status of the progress with NRC.

2. Expedite the development of an alternative treatment technology that destroys the organics in the SRS Pu-238 waste matrix to eliminate hydrogen gas generation as a transportation issue (see CAB recommendations 4, 11, 18, 27). While costly, the treatment capability will provide SRS with an alternative to enhance the transporter payload should these rule changes or

technology requirements fall short of expectations, or should NRC not approve the changes to the transportation rules that would permit SRS to ship the Pu-238 in the sufficient quantities that would make transportation a viable path forward.

3. Establish recommendations 1 and 2 as a two-track approach. Assure, in writing, to the Board that the Pu-238 waste at SRS will eventually be safely removed from South Carolina and safely disposed at WIPP as agreed to by the Governor of South Carolina and the Secretary of DOE.

Agency Responses

Department of Energy-SR