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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 6, 1994

MEMORANDUM FOR: Technical Director

FROM: Richard E. Tontodonato

SUBJECT: Status of Efforts to Accelerate Plutonium Solution Stabilization at the Rocky Flats Plant

- 1. Purpose:** This memorandum is a report of a visit by the DNFSB staff (Richard Tontodonato and outside expert A. Thomas Clark) to the Rocky Flats Plant on March 16-18, 1994, to review progress toward commencing stabilization of high-level plutonium solutions.
- 2. Summary:** Stabilization of high-level plutonium solutions at the Rocky Flats Plant, originally planned to begin in mid-1992, has been delayed to March 1996. EG&G-Rocky Flats recognizes that the schedule for stabilizing the high-level plutonium solutions should be accelerated and has begun a senior management review to identify what can be done to expedite the program. This review, scheduled to be completed in mid-April, is examining processing alternatives and revisiting assumptions to eliminate unnecessary, self-imposed obstacles. EG&G has also obtained assistance from Los Alamos National Laboratory (LANL) to address criticality safety analyses, which are currently the rate-determining step in the stabilization schedule.
- 3. Background:** About 20,000 liters of solutions containing plutonium and other actinides are stored in tanks, plastic bottles, and piping systems at the Rocky Flats Plant. EG&G is currently solidifying dilute solutions containing less than 1.5 grams of actinides per liter in cement in Building 774. EG&G plans to stabilize solutions containing greater than 1.5 grams of actinides per liter by oxalate precipitation in a glovebox in Building 771, followed by calcination of the precipitate. This phase of stabilization was originally planned to begin in mid-1992, but has been delayed to March 1996. The principal reasons cited by DOE-RFO and EG&G for the delay have been the need for significant upgrades in Building 771, the need to address DNFSB Recommendations 90-2 and 90-6, the requirements of the NEPA process, and most recently, the need to re-determine nuclear material safety limits for all the systems, components, and activities involved in storing, transferring, and processing the solutions. The purpose of this trip was to determine whether significant acceleration of the stabilization schedule was possible.
- 4. Discussion:** EG&G recognizes that the schedule for stabilizing the high-level plutonium solutions should be accelerated and has taken several actions to expedite preparations for stabilization:

- a. A new management position responsible solely for the solution stabilization program has been created, to ensure the program receives adequate management attention.
- b. A senior management review is being performed to identify what can be done to expedite the solution stabilization program. This review is examining solution transfer and processing alternatives which may reduce the need for infrastructure restoration and new analyses, attempting to improve EG&G's criticality safety analysis procedures, and generally revisiting the assumptions underlying the stabilization program to eliminate unnecessary, self-imposed obstacles. This review is scheduled to be complete in mid-April.
- c. LANL assistance has been obtained to help EG&G assess how their process for establishing nuclear material safety limits can be accelerated. Over the next few weeks, LANL experts will assist EG&G in determining whether some of the existing safety limits can be recertified for use during the stabilization process without performing in-depth calculations, identifying ways to streamline EG&G's complex fault-tree approach to performing criticality evaluations, and determining whether changes in the planned stabilization process could result in significantly simpler criticality evaluations.

EG&G's ability to accelerate the solution stabilization program is currently limited by the fact that the necessary nuclear material safety limits are not expected to be completed until October 1995. If the reviews by EG&G senior management and LANL succeed in significantly reducing the time required to provide satisfactory limits, the schedule will be controlled by the NEPA process and by efforts to demonstrate compliance with DNFSB recommendations, particularly 90-2 and 90-6. Maintenance and upgrades required to support stabilization in Building 771 primarily consist of a large number of small jobs, which could be worked in parallel to keep pace with other improvements in the schedule.

Based on direction received from DOE Headquarters, EG&G and DOE-RFO are planning to perform an environmental assessment (EA) for solution stabilization. The EA process should be complete by March 1995. Efforts to comply with Recommendation 90-6 should be complete in late-1994, but it may take longer to satisfy Recommendation 90-2.

5. **Future Staff Actions:** The DNFSB technical staff is planning to visit the Rocky Flats Plant in late April to review the results of the EG&G senior management review of the solution stabilization program.