

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 9, 2002

TO: J. K. Fortenberry, Technical Director
FROM: D. F. Owen, RFETS Site Representative
SUBJECT: RFETS Activity Report for the Week Ending August 9, 2002

Control of Subcontractors and Other Outside Organizations. As reported on February 15, 2002, Kaiser-Hill had been determining actions to improve the major projects' control of outside organizations to address prior problems and an increasing amount of decommissioning work planned to be performed by subcontractors and other personnel not directly attached to the major projects. The site rep. noted that the actions determined at that time were largely focused on facility shift management knowledge of the subcontractor work being performed and did not clearly address aspects regarding proper flow-down of safety requirements and work planning/control processes nor strengthening on-the-floor oversight of outside organization work by Kaiser-Hill. During the Board's visit to RFETS in late February, DOE-RFFO and Kaiser-Hill noted that additional site-wide actions toward control of subcontractors were in development.

This week, DOE-RFFO and Kaiser-Hill personnel briefed the Board (via video teleconference) on actions developed since February to control subcontractors in nuclear facilities. Several actions by Kaiser-Hill and DOE-RFFO were identified in the areas of: verification of flow-down of safety requirements in subcontractor processes, including work planning/control processes with emphasis on proper development of job hazard analyses for individual activities; transfer of applicable lessons learned at RFETS to the subcontractors; mentoring of subcontractor work planning and supervisory personnel; confirmation of operational readiness; and Kaiser-Hill and DOE-RFFO on-the floor oversight of subcontractor work. (1-C)

Plutonium Stabilization and Packaging System (PuSPS). Last Friday, PuSPS personnel noted failed attempts to complete a full 4-hour oxide stabilization run (at 1000 °C) in a PuSPS furnace and requested troubleshooting of the furnace. Upon opening the furnace on Saturday, much of the furnace tray (made of Alloy 600, an alloy of mostly nickel, chromium and iron) was discovered to have been attacked in an apparent chemical reaction. The oxide being stabilized was supposed to be relatively pure (about 96% oxide). Furnace temperature profiles indicate that thermocouples remained functional during the heating cycles and no furnace thermal excursion is suspected. Following internal reporting of this condition, oxide stabilization was stopped and recovery planning commenced. On Thursday, the site rep. observed furnace clean-out activities that included removal of remnants of the furnace tray and the stainless steel floor stand for the tray. Samples of the oxide and tray were obtained.

Sampling results and investigation of the cause of this occurrence is in progress; however, Kaiser-Hill has informed DOE-RFFO that the most likely cause is sulfur contaminants in the oxide reacting with the Alloy 600 (particularly the nickel) at PuSPS furnace temperatures. Kaiser-Hill personnel noted that sulfuric acid was added in small amounts to assist in a plutonium recovery process involving hydrogen peroxide precipitation in the mid 1980's in Building 371. Kaiser-Hill suspects the thermal treatment of the precipitates (via hotplate heating) may not have adequately removed any remnant sulfur. The site rep. will continue following this issue. (3-A)