DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 12, 2001

TO: K. Fortenberry, Technical Director
FROM: D. Grover and M. Sautman, Hanford Site Representatives
SUBJECT: Activity Report for the Week Ending January 12, 2001

Plutonium Finishing Plant (PFP): A recent review of 20 - 40+ year old shipping and processing records has identified that the plutonium alloy inventory does not solely consist of large pieces of well understood alloys. Recent radiography examinations also found that there is sometimes little correlation between the material description and the actual contents (e.g., skulls that look more like wire). Most of the rich alloy items destined to be packed into 3013 cans will have to be thermally stabilized, sorted, and/or processed because they are actually potentially reactive carbides, oxidized alloys, or high specific surface area wire. Others contain metal and ceramic items, Kleenex, and trash and one item is packed in a plastic jar. Some of the lean alloy scrap and residues are finely divided chips, turnings, foils, and casting skulls. The item of most concern is a drum with 2 cans containing turnings in oil. This drum is stored in the vault and at the Site Rep's request, vault personnel are checking to see if it is vented. The stability of these items is uncertain because of the limited reactivity data for high specific surface area Pu-Al alloys of varying compositions. Plutonium aluminum alloys have increased resistance to ignition and oxidation and old processing reports describe this material as having very good corrosion resistance and not being pyrophoric. However, it is uncertain whether these alloys are still unreactive when they have high specific surface areas. As a result of this investigation, PFP has initiated the development of a characterization program (i.e., data quality objectives) and plans to sample and analyze the 39 items currently identified as potentially reactive. Another issue is that Hanford is proposing that the lean "alloy-like" alloys be repacked by June 2001 and the "residue-like" alloys be dispositioned by April 2004. While this might meet the letter of the alloy and residue milestones, it might not make sense from a risk prioritization point of view since the "alloy" items are stable rods and plates while the "residue" items contain all of the potentially reactive items. If characterization indicates that these items are reactive, then this proposal may need to be modified. The technical staff will be reviewing the development of the characterization program and the analysis of the results. In light of this and other surprises over the past year, it might be worthwhile for PFP to review their "misc. Pu-bearing material" and "non-polycube combustible" residue inventories to ensure there are no further surprises. (III-A)

Spent Nuclear Fuel Project: The project is preparing to ship the 2nd multi-canister overpack (MCO) next week. The MCO has been received at K-West Basin and 5 of the 6 fuel baskets have been filled. During the maintenance organization preparation of the shield plug assembly, the DOE facility representative identified that a verification step had been incorrectly performed prior to continuing the procedure. This follows several instances of verification steps being incorrectly performed during preparations of the 1st shield plug, including the incorrect installation of cover plates. (III-A)
cc: Board members