

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 29, 2003

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: C. H. Keilers, Jr.
SUBJECT: Los Alamos Report for Week Ending August 29, 2003

Plutonium Facility (TA-55): The NNSA Type B investigation on the 8/5/03 Pu-238 contamination event continues. The suspect containers have been relocated to a glovebox line and planning for non-destructive examination is underway. The moveable cage holding the containers in the affected room has been restored to comply with authorization basis seismic requirements (i.e., cage is closed and chained to the wall). The cause of this event and the initial dose estimates for the workers are still to be determined. The containers remain the primary suspects.

Last Monday (8/18/03), one crafts worker had positive nasal smears after contamination was found in the torso area of his anti-Cs, and the worker has been put on prompt bioassay. The worker had been engaged in dismantling equipment in a Pu-239 glovebox and was using leather gloves over the glovebox gloves while cutting, a best practice. Upon investigation, contamination (400k dpm alpha, 1k - 4k dpm removable) was found on the small window between the gloves. The glovebox gloves are intact. Air monitor indications were elevated but not to a level that would set off an alarm. The site rep understands that the pathway for the release from the glovebox remains undetermined. Speculation centers on the window gasket, which has been taped over with metal tape.

On Wednesday, the NNSA Site Office issued a clarification and amendment to the Pu-238 scrap recovery line technical safety requirements (TSRs). Some key aspects are:

- NNSA named the dissolver argon flush system, the dissolution vessel vent interlock, and the oxalate filtrate storage vessels as safety-significant. NNSA believes that both the dissolution vessel and these storage vessels would be capable of withstanding a hydrogen deflagration. Fill-vent line valves for these storage vessels have also been removed for defense-in-depth.

The site rep observes that, per the LANL PrHA, the oxalate filtrate storage vessels are larger, made of different material, and in a different glovebox than the dissolution filtrate storage vessels. The NNSA letter includes a LANL structural analysis of the latter as an attachment.

- NNSA imposed specific ion exchange resin replacement requirements, including a lower dose limit (now 500 Mrads) to be based on total Pu residence time calculated before and after each run. The dose limit may be reevaluated later as process operational experience matures. NNSA considers these to be do-not-exceed TSR limits.
- NNSA stated that there shall be a proceduralized surveillance on ion exchange column liquid level, including a daily check to detect leakage before initiating glovebox operations.
- NNSA required LANL to define hazard scenarios and critical process steps that require 2-person verification, such as those required to prevent a nitric acid - HAN reaction. When submitted and if acceptable, NNSA intends to approve this list as part of the safety basis.

NNSA also asked LANL to complete an unreviewed safety question determination on thermal vs material-at-risk limits for this operation and to provide an analysis of the safety impacts of alternatives (e.g., 2-shift operation) and a comparison of the relative merits of the scrap recovery line vice more production emphasis on the bench scale process.