

# Information Bulletin

This Bulletin is being provided to you for review, analysis, and internalization as applicable.

**Title:** Potential Dose Consequences Underestimated in Accident Analysis

**Date:** June, 7, 2006

**Identifier:** 2006-RL-HNF-0022

**Lessons Learned Summary:** When developing, reviewing, and approving Documented Safety Analyses (DSA) all assumed conditions related to a defined hazard must be properly recognized. Necessary controls must be identified, documented, and implemented to ensure those assumed conditions fall within bounded accident analyses.

**Discussion of Activities:** During a review of the controls needed for the PFP Interim Secure Storage Facility, the actual available material-at-risk in some of the 3013 containers was discovered to exceed the value analyzed in the approved authorization basis documents.

**Analysis:** Around the 1999 time frame, the PFP began stabilizing material in the facility for long-term storage under the existing controls provided in the Final Safety Analysis Report. Once stabilized, the material was repackaged into 3013 containers and placed into long-term storage.

In 2002, the PFP was developing a new DSA to replace the existing Final Safety Analysis. DSA development included a reanalysis of the consequence to a co-located receptor based on the maximum allowable material that could be contained in a 3013 container (if it was all dispersible) and upon a more conservative definition of the potential co-located receptor driven by the Hanford Safety Analysis and Risk Assessment Handbook. The reanalysis revealed unacceptable risk and consequence. As a result, an effort was taken to reduce the risk by defining the actual form of the material to be dispersed and the amount of dispersible material contained in a 3013 container. This was done through discussion with the operations organization concerning actual values obtained during the first part of the stabilization campaign. This discussion identified that there was a maximum amount of material in the 3013 containers due to the physical volume available and the decay heat limit of the 3013 container. What complicated this development process was the control of the information about these items as sensitive data. Incorporation of the characteristics of the contained material and the reduced inventory reduced the risk to an acceptable level.

Also, based on the belief that this physical limit was a physical restriction and could never be achieved in a 3013 container, no additional controls were identified in the material management program. As such, this bounding inventory assumption was entered into the DSA and not questioned during any subsequent reviews or during approval. In fact about 1.5% of the 3013 containers eventually produced contained greater than the assumed value used during this development.

## Recommendations:

- When developing, reviewing, and approving Documented Safety Analyses (DSA) all assumed conditions related to a defined hazard must be properly recognized.

- Necessary controls must be identified, documented, and implemented to ensure those assumed conditions fall within bounded accident analyses.

**Cost Savings/Avoidance:** Not evaluated

**Work Function(s):** Authorization Basis

**Hazard(s):** Personal Injury/Exposure, Radiological Release

**Keywords:** Accident analysis, Documented Safety Analysis, Unreviewed Safety Question, 3013 containers

**Originator:** Fluor Hanford, Inc., Submitted by Chuck Ames-Plutonium Finishing Plant

**Contact:** Project Hanford Lessons Learned Coordinator; (509) 372-2166; e-mail: [PHMC\\_Lessons\\_Learned@rl.gov](mailto:PHMC_Lessons_Learned@rl.gov)

**References:** Occurrence report EM-RL--PHMC-PFP-2006-0005 "Some accident analyses in the 2736-Z Complex Safety Basis under-estimated the potential dose consequences from 3013 failure (USQ)"