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# HB-Line Phase III Safety Control Violation

## *Review of the Event, Causal Analysis and Corrective Actions*

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*Briefing for the SRS Citizens Advisory Board Nuclear Materials Subcommittee*
*December 1, 2015*

# Agenda

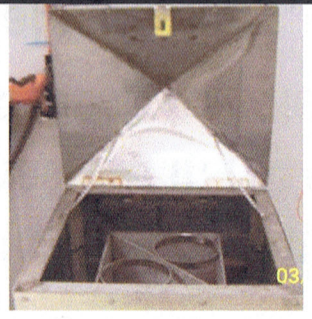
- HB Line Material Flow Overview
- Discussion of Controls
- Event Summary and Immediate Actions
- Causes of the Event
- Corrective Actions
- Path Forward

# HB Line Material Repackaging Flow Overview

Retrieve material from storage → Remove outer storage can → Place inner cans in a glove box → Open inner cans

* New steps

Place material in dissolvable cans and SRNL sample cans* → Remove diss. cans and SRNL sample cans* from glove box → Place diss. cans and SRNL sample cans* in carts → Return material to storage



3 pieces of p. metal → SRNL for alternative to aqueous process



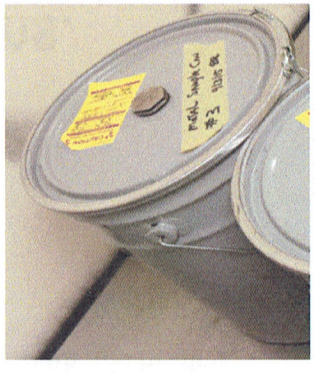
"$" - by procedural step denotes criticality issue

# Discussion of Controls

- DOE Orders require that two independent controls must be in place when handling fissile material in HB Line. This is known as the "Double Contingency" approach to safety.
- In HB Line material repacking, the two independent controls are:
  1. *Fissile material mass*
  2. *Spacing between fissile material containers*
- In this event, the mass of the fissile material was controlled at all times during repacking and storage so the facility remained safe.
- Because the SRNL samples were placed in the wrong storage containers, the spacing between the containers was not controlled as required.

# Event Summary and Immediate Actions

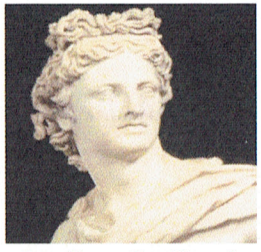
- Two stainless steel cans were opened and material repackaged into two dissolvable cans and 3 SRNL sample cans without incident.
- The two dissolvable cans were placed in carts and stored as required.
- The three SRNL sample cans were placed in three separate pails instead of carts as required by the procedure and then the pails were placed in storage.
- On the next working day during a document review, other HBL workers identified that the SRNL sample cans were stored in pails instead of carts as required. The shift operations manager was notified, all material movements in HB Line were suspended and the event was reported to SRNS and DOE management.
- SRNS CEO directed an operational pause for all operations. Only those activities related to safety and security were allowed to continue.



SRNL – Savannah River National Laboratory
SRNS – Savannah River Nuclear Solutions
DOE – Department of Energy

# Causes of the Event

- SRNS uses the Apollo root cause analysis method to determine causes of an event. This method does not identify a single root cause, but identifies many causes and focuses on actions to prevent recurrence.



Apollo – the Greek and Roman god of truth and healing

- Causes of the event identified using the Apollo method.
  1. Willful procedure violation by the work team.
  2. Unwillingness of the work team to call a Time Out.
  3. Significant departure from observed conduct of operations.
  4. Less than adequate First Line Manager performance.
  5. Less than adequate management engagement.

# HB Line Corrective Actions

1. Hold meetings with all employees in small groups (typically less than 10 people) to confirm employees' understanding of expectations on procedure compliance, when to take a time out, actions to take when work delays encountered, and adequacy of pre-job briefs.

2. Develop and initiate an improved continuing cycle training, including scenario-based training, for conduct of operations topics for HB Line.
3. Strengthen the management chain for the repackaging group and reinforce expectations for reporting issues through the shift operations manager.
4. Initiate use of Conduct of Operations Mentor in HB Line.
5. Incorporate lessons learned from this event into the HB Line assessment plan to monitor procedural adherence and management engagement.
6. First Line Manager leadership training.
7. Develop a case study of this event for the HB Line leadership team.

time pressure impact
-break work into 2 shifts?

# Path Forward for HB Line and SRNS

- **Communicate the root cause analysis from the HB Line event to other SRNS facilities.**
- **Complete reviews of complex and high risk work, discussions with with on | adherence expectations, and corrective actions.**
- **Exit deliberate operations after thorough reviews of assessments and corrective actions by Senior SRNS and DOE management teams.**
- **Complete longer term actions in the Deliberate Operations Plan including:**
  - Actions from external assessment of nuclear safety culture.
  - Improve the procedure validation process.
- **Complete actions in the Sustainment Plan to sustain the improved performance in conduct of operation including:**
  - Conduct short operational pauses each month.
  - Facility self assessment program to periodically review performance.
  - Improve the Contractor Assurance System of monitoring performance so actions may be identified beforehand to prevent future events.
  - Review of the items above by Senior SRNS management.



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mcguire "rate at which we produce is undefined now"
no annual rate set - might be 100 kg year