**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

July 13, 2001

**TO:** J. Kent Fortenberry, Technical Director
**FROM:** Paul F. Gubanc, Oak Ridge Site Representative
**SUBJ:** Activity Report for Week Ending July 13, 2001

A. Y-12 Integrated Safety Management (ISM) and Disassembly: Relative to the three YAO letters issued last week concerning ISM and readiness, the following occurred this week:

1. Development division operations are still paused pending case-basis evaluation. BWXT management approved resuming operations in a pilot facility but this was reversed when YAO discovered their conduct of operations concerns (e.g., procedures, work control) with this operation had not been addressed by BWXT.
2. BWXT hopes this weekend to complete the physical modifications (i.e., alarm beacon) required to return disassembly walk-in hood "AG" to operation. Newer disassembly hood "AL" and the Quality Evaluation hood are still secured.
3. In response to YAO's overall concern with recent ISM lapses, BWXT proposed conducting a series of safety-focused training sessions for supervisors who then, in turn, would train their crews. The sessions were to occur this week but after previewing the training materials, YAO was unconvinced that BWXT had clearly identified the root causes of recent events. After extended discussions with YAO, the training is now scheduled to occur next week. (2-A)

B. Y-12 Enriched Uranium Operations (EUO) - Reduction: The button from last week's reduction firing was knocked out Tuesday. The temperature-indicating paints applied to the reduction vessel bottom indicated that bottom temperatures peaked between 1400°F and 1480°F; well above the ASME maximum allowable (850°F) originally assumed but below the 1500°F of the revised analysis. BWXT engineering is still evaluating the data and its implications. (2-A)

C. ORNL Building 3019 U-233 Inspection Program: On July 10, UT-Battelle (UT-B) made its declaration of readiness to DOE-ORO for Phase-1 of the U-233 inspection program. The DOE ORR is expected to start on July 16 and conclude on July 27. Of the eight "manageable open items" listed in UT-B's declaration, the only one which raises concern is to complete and implement an alarm response procedure. This would seem a necessary element for readiness and evaluation by the DOE ORR. I and other staff observers will follow up on this next week.

Much of this week has been spent attempting to understand the relationship between Building 3019 and the Bechtel-Jacobs operated Stack 3039, which provides HEPA-filtered ventilation for the 3019 vessel off-gas (VOG) system which services the U-233 storage wells and inspection chamber. My report of June 29 was not adequate to discuss the confusing state of affairs which are described in the attachment to this report. This week, the DOE-ORO Manager at my urging and that of the DOE ORR team, and over the strenuous objections of ORNL and DOE-ORO line management, agreed to include the VOG and the associated portions of Stack 3039 into the scope of the DOE ORR. (3-A)

Attachment

cc: Board Members

**Details Regarding ORNL Building 3019 (U-233 Storage and Inspection) and Stack 3039**

- Bechtel-Jacobs Company (BJC), the DOE-Oak Ridge Operations (DOE-ORO) environmental management prime contractor operates Stack 3039 through a subcontract with Duratek. Stack 3039 provides HEPA-filtered ventilation for the ORNL Building 3019 vessel off-gas (VOG) system which services the U-233 storage wells and inspection chamber. UT-Battelle (UT-B), DOE-ORO's ORNL prime contractor, operates Building 3019.

- In July 2000, ORNL published a confinement ventilation assessment for Building 3019. That report (a requirements-based engineering study) identified the lack of secondary confinement for the VOG as a major concern. The report's 23 recommendations were prioritized by risk and the two VOG-specific recommendations, to separate the VOG into two separate systems and install local HEPA filtration, scored highest. The first recommendation was addressed by installing a sintered metal filter in the vent path (**not** HEPA equivalent) during inspection. The second has yet to receive the "full risk prioritization" called for in the report.

- Building 3019 inspection procedures require Stack 3039 to be operational prior to performing any work. Loss of stack 3039, requires inspection work be terminated. Stack 3039 vacuum is important enough to merit a local indicator and alarm at Building 3019.

- Other than the VOG, Building 3019 owns and operates three other HEPA ventilation systems (COG, LOG and GBOG) which all exhaust into a separate 3019-operated stack, Stack 3020. The Building 3019 SAR, approved by DOE-ORO in March 2001, states that Building 3019's COG and LOG are not required to reduce a radioactive material release into the penthouse below evaluation guidelines. However, the height of Stack 3020 is specifically credited (SAR Table D-2, events138 and 145). Additionally, the COG and LOG are classified as "safety-significant" because they "provide significant defense-in-depth protection for on-site and off-site receptors" (SAR Ch. 4).

  The above event scenarios assume radioactive material is released into the penthouse from inside the inspection chamber (because strangely it is not a credited safety feature). A more realistic scenario is that a release inside the inspection chamber will be drawn into the main ventilation path, the VOG, and exhausted out Stack 3039. (To classify as "safety-related" Stack 3020, the COG and LOG but to **not** credit Stack 3039 and the VOG is inconsistent.)

- In accordance with BJC's September 2000, "Auditable Safety Analysis (ASA)," Stack 3039 is a radiological facility with HEPA filters and redundant, automatic starting blowers which are classified as defense-in-depth safety features. No specifics are offered as to how these safety features are maintained. Stack 3039 services many other sources in addition to 3019 but an accident analysis for a radioactive release from one of these sources was not done because the "facility only serves a pass-through function for accidents in source facilities....source facilities cannot take credit for the 3039 Stack to be operational during an upset condition." (BJC's dismissal of such upsets by fiat seems unsupportable.)