

**ATTACHMENT 2**

**LIVERMORE SITE OFFICE APPROVAL OF JCO**



**U. S. Department of Energy**  
National Nuclear Security Administration  
Livermore Site Office  
PO Box 808, L-293  
7000 East Avenue  
Livermore, California 94551-0808



**MAR 17 2010**

5481.1.1.8  
COR-NSI-3/5/2010-238826

Dr. Bruce T. Goodwin  
Principal Associate Director  
Weapons and Complex Integration  
Lawrence Livermore National Security, LLC  
Lawrence Livermore National Laboratory  
7000 East Avenue, L-160  
Livermore, CA 94551

**Subject:** Approval of Justification for Continued Operations for Building 331 Tritium Facility (TS:100023)

- References:** (1) Letter (J. Mansfield/T. D'Agostino), *Review of the Tritium Process Station at Lawrence Livermore National Laboratory*, dated January 27, 2010
- (2) COR-NSI-12/6/2009-218049 (A. Williams/B. Goodwin), *Scope of the Tritium Facility Documented Safety Analyses and Technical Safety Requirements Annual Update*, dated December 22, 2009
- (3) NMTP-10-024 (B. Goodwin/A. Williams), *Transmittal of Justification for Continued Operations for Building 331 (B331) Tritium Facility*, LLNL-JCO-10-001, dated March 5, 2010
- (4) Department of Energy Guide 424.1-1A, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, dated July 2006
- (5) COR-NSI-12/21/2009-221081 (A. Williams/B. Goodwin), *Validation of Closure of Tritium Facility Grinder Readiness Assessment Pre-Start Findings by the Livermore Site Office (TS:090097)*, dated December 21, 2009

Dear Dr. Goodwin:

Recently, questions have been raised by the Defense Nuclear Facilities Safety Board (DNFSB) (Reference 1) and the National Nuclear Security Administration/Livermore Site Office (LSO) (Reference 2) as to the adequacy of the current Building 331 (B331) Safety Basis, with respect to

facility worker risk for certain tritium operations. No such concerns exist for co-located workers or the general public due to the nature of potential releases, the amount of tritium or tritium compounds potentially involved, and distance to these receptors; unmitigated tritium releases would result in negligible to low consequences to co-located workers and the general public as documented in the approved Safety Basis. A Justification for Continued Operation (JCO) was agreed upon by the Lawrence Livermore National Laboratory (LLNL), LSO, and DNFSB as an acceptable path forward to document additional temporary hazard controls (i.e., compensatory measures) to limit potential facility worker risk for the scenarios of concern, until a revised Safety Basis can be prepared, approved, and implemented. LLNL submitted the JCO for LSO approval in Reference 3.

The JCO states it provides compensatory measures to prevent and mitigate the following release scenarios:

- Tritium release coincident with a fire;
- Tritium glovebox deflagration; and
- Large tritium releases.

The JCO additionally proposes a compensatory measure termed Deliberate Operations to address conduct of operations concerns raised in References 1, 2, and 5, associated with tritium glovebox operations in the Tritium Process Station, Tritium Science Station, and operation of the large-scale commercial grinder. However, the JCO does not include a detailed definition of Deliberate Operations.

The JCO documents each of the issues of concern and proposes interim controls to ensure that continued operation of the tritium facility is accomplished without a significant increase in risk to facility workers beyond that accepted under the currently approved Safety Basis. The JCO interim controls would remain in effect until LLNL implementation of a revised Documented Safety Analysis hazards analysis and control flowdown approved by LSO; the Safety Basis Amendment is scheduled for submittal in June 2010.

The following interim controls were proposed in the JCO to decrease risk to the facility worker:

1. Tritium room monitors will be checked daily at the computer displays located at the Radioactive Material Area entrance (Alcove PC) to verify that (1) no low flow alarms are present, and (2) the displays are updating with data from the tritium room monitors.
2. Tritium room monitors will be checked weekly for proper air flow and response to a check source (e.g., detection and audible bell).
3. Before tritium processing operations commence, operators will verify the tritium room monitor display in that room is on and the monitor calibration sticker is current.

4. Facility management will define increased management involvement via Deliberate Operations to include tritium operations in the Tritium Process Station, Tritium Science Station, grinder startup, and legacy waste activities. This increased management involvement will be graded by facility manager determination.

LSO used Reference 4 in reviewing the subject JCO. LSO's review concluded that the three interim controls for tritium room monitors ensure the availability of operable monitors to detect and alert facility workers to tritium releases. These monitors mitigate facility worker consequences by alerting workers to a release of tritium thereby initiating prompt evacuation of facility workers and minimizing exposure time and, thus, consequences. These controls provide adequate assurance that sustained facility worker exposure to a tritium release will be minimized. The tritium room monitor controls shall be treated as Technical Safety Requirement (TSR) Specific Administrative Controls. These compensatory measures are in addition to the existing preventive and mitigative controls in the approved Safety Basis that provide protection against the aforementioned facility worker hazards. They include combustible loading limits, tritium storage vessels pressure control, and glovebox hydrogen species limit.

Strict adherence to current TSR controls to limit hydrogen such that lower flammability limits cannot be challenged, along with the operable tritium room monitors, will ensure that facility worker risk from glovebox deflagration is minimized.

LSO has concluded that an additional compensatory measure that ensures the availability of the B331 fire detection and alarm system to alert facility workers in the event of a fire is appropriate. The fire detection and alarm system is currently designated as equipment important to safety in the B331 Documented Safety Analysis. The fire detection and alarm system sounds an alarm if excessive heat or smoke is detected in the facility and protects workers from fire by detecting it at an early stage and initiating an evacuation. Therefore, the following additional compensatory measure to be treated as a TSR Specific Administrative Control is a condition of approval of the JCO:

- The B331 fire detection and alarm system shall be operable when Radioactive Materials Area (RMA) laboratory rooms are occupied. If the system is not operable a fire watch shall be implemented when RMA laboratory rooms are occupied. Operability shall be determined by testing the heat detectors, the smoke detectors, and the backup battery supply for functionality and verifying annunciation in the B331 RMA on a periodicity consistent with National Fire Protection Association requirements.

LSO considers the proposed controls for tritium room monitors with the additional fire detection and alarm system compensatory measure sufficient to provide adequate assurance that risk to facility workers will remain similar to that approved under the current B331 Safety Basis. Therefore, LSO approves the JCO presented in Reference 3. LSO continues to encourage management involvement in all pertinent activities, such as start-up and on-going operations.

Effective immediately, Reference 3 and this letter shall be added to the B331 Safety Basis and shall remain until LLNL declares implementation of the approved safety basis amendment discussed above or until rescinded by LSO.

If you should have any questions, please contact Tom Grim at (925) 422-0704 or Heather Larson at (925) 424-2877.

Sincerely,



Alice C. Williams  
Manager

cc:

J. Plaue, DNFSB  
M. Bronson  
K. Cadwell  
D. Chin  
K. Foote  
H. Holloway  
L. Lisle  
D. Mailhot  
M. Martinez  
M. Merritt  
M. Mintz  
M. Mitchell  
D. Pinkston  
R. Rocha  
P. Schafer  
J. Sloan  
D. Squire  
T. Talovich  
A. Warner  
NMTP File