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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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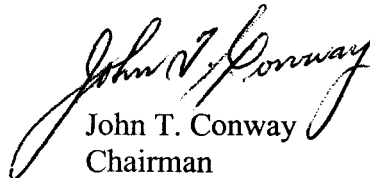
August 14, 2001

Mr. Steven V. Cary  
Acting Assistant Secretary for  
Environment, Safety and Health  
Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0119

Dear Mr. Cary:

The staff of the Defense Nuclear Facilities Safety Board (Board) observed the pilot Phase II assessments of confinement ventilation systems conducted at the Savannah River Site's H-Canyon on June 18–22, 2001, and the Lawrence Livermore National Laboratory on July 16–20, 2001. These assessments were conducted in accordance with the Implementation Plan for the Board's Recommendation 2000-2, *Configuration Management of Vital Safety Systems*. The staff made several observations that the Board believes could be used to strengthen the Criteria Review and Approach Document (CRAD) for future Phase II assessments. The enclosure to this letter summarizes the staff's observations and is provided for your information and use.

Sincerely,

  
John T. Conway  
Chairman

c: Mr. Michael J. Oldham  
Mr. Ralph E. Erickson  
Mr. Mark B. Whitaker, Jr.

Enclosure

## Enclosure

Observations of the Defense Nuclear Facilities Safety Board's (Board's) staff on the Recommendation 2000-2, *Configuration Management, Vital Safety Systems* Pilot Phase II Assessment of Confinement Ventilation Systems at the Savannah River Site (SRS) and the Lawrence Livermore National Laboratory (LLNL).

On June 18–22 and July 16-20, 2001, the Board's staff provided oversight of the Department of Energy's (DOE's) assessment of confinement ventilation systems at SRS and LLNL. As the initial Phase II assessments performed in accordance with the Implementation Plan for Recommendation 2000-2, these assessments served as a proof test for the Criteria Review and Approach Document (CRAD) titled *Assessment Criteria and Guidelines to Ascertain the Current Condition of Confinement Ventilation Systems*. The assessment at the SRS H-Canyon was conducted in accordance with Commitment 11 of the Implementation Plan as the first of two pilot Phase II assessments. A second pilot assessment was conducted at LLNL, Building 332. The pilot assessments will be used to enhance or modify the assessment criteria and guidelines before the field office managers are given the responsibility for carrying out the Phase II assessments at the remaining facilities. The Phase II assessment teams have documented their conclusions and recommendations. The following additional observations made by the Board's staff during the pilot assessments at SRS and LLNL are provided as input to strengthen the CRAD for future assessments:

- While both the implementation plan and the guiding principles contained in the lead-in material for the CRAD called for evaluating degradation of the system over its service life the assessment criteria did not specifically call for this evaluation. Therefore, the H-Canyon pilot assessment did not address the ability of the confinement ventilation system to perform its safety functions reliably during its remaining lifetime. The CRAD was revised before the second pilot and the review of Building 332 at LLNL was therefore more thoroughly conducted. However some inconsistencies between guiding principles and the assessment criteria still exist. In addition, an in depth review is merited to ensure consistency between the implementation plan and the CRAD.
- LLNL created detailed documentation supporting Phase I reports that were conducted earlier. While this was not required as a part of the Phase I reviews, they provided invaluable assistance during the conduct of the Phase II review. Therefore, the CRAD should be revised to ensure they are made available to the assessment team.
- System walkdowns are specifically called for in the CRAD to assess existing material conditions and physical layouts. During the H-Canyon pilot assessment, the system walkdowns were limited to system "tours" and provided only an overview for the assessment. During the LLNL review discussions among the Board's staff, the assessment team, and site personnel indicated that more clarification is needed in the CRAD as to what is required to adequately perform the system walkdowns.

- The purpose for these pilot assessments was to evaluate the CRAD being developed for confinement ventilation systems that are important to safety. SRS, LLNL, and several other sites have divided the confinement ventilation system, as well as other safety systems, into several subsystems that are listed as vital safety systems. These vital safety systems may be safety-class, safety-significant, or defense-in-depth systems. The physical boundaries of the Phase II review must encompass each of the vital safety systems and their necessary support systems that make up the safety system being evaluated (e.g., confinement ventilation systems). This physical boundary must be clearly communicated to the assessment team before the start of the review. In addition, those supporting systems that are called for to ensure that the vital safety systems remain operable need to be listed as vital safety systems and need to be reviewed as appropriate in accordance with the implementation plan.
- Preparation of the team leader and members is crucial. Adequate time has to be allotted for this preparation, and the necessary system-specific information (e.g., drawings) and training needs to be included. In addition adequate time needs to be allocated for the performance of the review. The CRAD specifically references a three week period for the preparation, conduct, and reporting of these assessments. While it is not clear that the CRAD needs to reference a specific time period, it does need to be more specific as to what is intended to occur during this time period.
- When the assessment team observes challenges to future operations (e.g., leaks, cracks), these should be documented so the facility can take action to ensure that appropriate compensatory measures are in place, and needed repairs are made in a timely manner.
- While the authorization basis should not be reconstituted, a mechanism ought to be in place for documenting and communicating any problems in the authorization basis that are noted during the assessment.
- It proved very beneficial to have teams that were comprised of experts in the area being reviewed, in this case confinement ventilation systems, and that the team leaders had excellent administrative skills. It may be useful to develop and use a cadre of experts and team leaders to perform these reviews. In this regard, a senior, trained DOE employee should lead the assessment team, and be involved in selecting and training members of the team. Consideration should be given to developing a Team Leader's Handbook similar to that used for the integrated safety management system verifications, although less detail may be required.
- While the systems reviewed at SRS and LLNL do not depend heavily upon software for control, many electro-mechanical systems do. A review of the CRAD is merited to determine what changes are necessary to ensure that software is adequately verified and validated to support the operability of the vital safety system.