Department of Energy
Washington, DC 20585

March 6, 2007

The Honorable A. J. Eggenberger
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004 - 2901

Dear Mr. Chairman:

On December 7, 2004, the Defense Nuclear Facilities Safety Board (Board) issued Recommendation 2004-2, *Active Confinement Systems.* The Department of Energy's (DOE) Implementation Plan (IP) for Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-2 requires the DOE to "[r]evise, as necessary, the Ventilation System Evaluation Guidance document based on experience and lessons learned from the pilot facility evaluations."

This deliverable (deliverable 8.6.4) has been completed using the pilot evaluations for:

- Savannah River Site Actinide Removal Process 242-96H and 512-S Facilities
- Idaho Cleanup New Waste Calcining Facility
- Savannah River Site Pit Disassembly and Conversion Facility

The pilot evaluation for PF-4 facility at TA-55 at the Los Alamos National Laboratory has been completed, but has not yet been fully reviewed by the Independent Review Panel (IRP). After discussion with the Recommendation 2004-2 IRP, National Nuclear Security Administration staff and the Board staff, it was decided to close this commitment based on the information gained from conducting three of the four pilot evaluations.

Based on these evaluations, the IRP has concluded that the *Ventilation System Evaluation Guidance* is fundamentally sound and that no significant revisions to it are required. Instead, an addendum to the Guidance has been prepared that contains cautions and lessons learned from the pilots (see Enclosure). This addendum will be shared on a DOE-wide basis through the IRP.

If you have questions regarding this issue, please contact me or John J. Nichols, Acting Director for the Office of Nuclear Safety and Environmental Policy at (301) 903-1018.

Sincerely,

Andrew C. Lawrence

Andrew C. Lawrence
Director
Office of Nuclear Safety and Environment
Office of Health, Safety and Security

Enclosure

SEPARATION

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2004-2 Ventilation System Evaluation Guidance Addendum

Cautions for Ventilation System Evaluations

1. *Use of the guide's evaluation process.*
   The purpose of the *Ventilation System Evaluation Guidance* is to assess whether or not upgrades to an existing system are needed to provide the reliability and/or performance expectations of Table 5.1. Justification of an alternative confinement strategy or classification is the purview of a facility safety basis and its review and approval, not the confinement ventilation evaluation.

2. *Consideration of incremental improvements.*
   The intent of the Ventilation System Evaluation Guidance is to look at the cost effectiveness of implementing each potential upgrade in existing configurations on an individual basis. Providing a relative rank ordering of potential upgrades would facilitate and support the final implementation decisions. Looking at the cost effectiveness of all potential upgrades collectively, subsets of multiple upgrades, or grouping of the upgrades or modifications is generally not appropriate unless this results in a synergistic effect on safety or costs (i.e., it may be less expensive to perform two upgrades at the same time) . Grouping upgrades should not be used as a method to raise the overall cost as a means to eliminate them using a cost/benefit analysis.

3. *Use of the guide's performance expectations.*
   The criteria identified in Table 5.1 of the *Ventilation System Evaluation Guidance* are functional design and performance expectations. During the evaluations, no attempt should be made to demonstrate code compliance or code reconstitution (as discussed in Section 5.1 of the Guidance document) since these activities may artificially increase the cost of potential upgrades. The intent is to evaluate the active confinement ventilation system to the performance expectations identified in the *Ventilation System Evaluation Guidance* only.

4. *Natural Phenomena Hazards (NPH) Assessment.*
   Table 5.1 of the *Ventilation System Evaluation Guidance* requires assessment of confinement systems if the safety basis credits them as being operational during or after an NPH event. NPH qualification of the modifications or upgrades should not be considered if the safety basis does not credit the system to be functional AFTER AN NPH EVENT, as the associated cost may artificially conceal the benefits of the upgrade in non-NPH related events. This is consistent with Section 5.1 of the Guidance document discussing the discretionary upgrades.

5. *Treatment of miscellaneous ventilation systems that are not building confinement systems.*
   In many instances, there may be miscellaneous ventilation systems within the facility that may not warrant separate reviews under Recommendation 2004-2. In these instances, the basis for not performing reviews of those systems separately should be documented in a site's Table 4.3 submittal to the IRP along with the basis for not performing the review.

6. *Treatment of Hazard Category 2 Facilities Whose Categorization is Based Solely on Criticality Hazards.*
   If the reason a facility has been categorized as Hazard Category 2 is due to the potential for criticality (versus radionuclide inventory), then the facility should be treated as Hazard Category 3 for Recommendation 2004-2 evaluation purposes.

7. *Situations where an existing study meets the objectives of the evaluation.*
   Where previous documented evaluations meet the intent of the evaluation guide, a report should be generated that demonstrates how they meet the intent of the Recommendation 2004-2 System Methodology review. The Facility Evaluation Team and the Site Review Team should review and concur that the earlier evaluation provides an equivalent level of review. This report and concurrences may be submitted to the appropriate site or field office in lieu of a new evaluation.

8. *Situations where the facility safety basis is not current.*
   Facility safety bases need to be kept up to date with current missions. Use of an out-of-date Documented Safety Analysis at the time of the confinement ventilation evaluation would require a significantly different approach than specified in the *Ventilation System Evaluation Guidance*. Where a facility safety basis does not reflect the current status of the facility, the Facility Evaluation Team and the Site Review Team should confer and agree upon a proposed path forward.

Lessons Learned from Pilot Evaluations

1. A ventilation system walk down with the site evaluation team, facility evaluation team, and system engineer was important in understanding how the ventilation system is configured and in understanding its weaknesses and strengths. Contractor and DOE evaluation personnel reviewed the Table 5.1 criteria as a group before the walk down. This helped focus the teams on what aspects of the system were credited by the Safety Analysis Report and what ventilation system concerns might require evaluation.

2. Team makeup is important. A safety analyst familiar with the facility safety basis and a system engineer for the ventilation system are important to providing a good evaluation.

3. The site and facility evaluation team approach as described in section 4.1 of the *Ventilation System Evaluation Guidance* worked well in performing the evaluation and should be continued.

4. The facility and confinement ventilation system overview sections of the final report are meant to provide general familiarity of the facility and ventilation system. A safety basis level of detail is not required or desired for this. Authors should adhere to the guidance provided in the *Ventilation System Evaluation Guidance* of one to two paragraphs for the facility overview and two to three paragraphs for the ventilation confinement system overview.

5. It was difficult to complete the Table 5.1 evaluation within a month. Facilities should start the evaluation as soon as possible and provide resources that can devote full time effort to completing the evaluation and writing the final report.