



The Secretary of Energy  
Washington, D.C. 20585

July 29, 2009

RECEIVED  
2009 JUL 31 AM 7:13  
SAFETY BOARD

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

Dear Mr. Chairman:

Enclosed is the latest report in response to your letter dated April 21, 2009, requesting the Department of Energy (DOE) provide the Defense Nuclear Facilities Safety Board (DNFSB) a report on actions to be taken to complete the deliverables and ensure conformance to DOE's *Ventilation System Evaluation Guidance*, developed in accordance with DOE's Implementation Plan for DNFSB Recommendation 2004-2, *Confinement Ventilation*.

DOE continues to agree with the DNFSB that active building ventilation confinement systems are normally the preferred alternative when a building confinement safety function is needed to protect the public or collocated workers. To this end, we are refocusing our efforts to complete actions identified in our Implementation Plan for Recommendation 2004-2. The enclosed report provides revised schedules and commitments for completing the remaining deliverables, which we are working to implement in the most responsible way possible for the Department.

If you have any questions, please contact Dr. James O'Brien, the Responsible Manager for Recommendation 2004-2, at (301) 903-1408.

Sincerely,

A handwritten signature in black ink, appearing to read "Steven Chu".

Steven Chu

Enclosure



SEPARATION

PAGE

Enclosure

**REPORT ON ACTIONS TO BE TAKEN TO COMPLETE  
RECOMMENDATION 2004-2 DELIVERABLES AND  
REMEDiate DEVIATIONS FROM DOE'S VENTILATION  
SYSTEM EVALUATION GUIDANCE**

**1. INTRODUCTION**

This report details steps the Department of Energy (DOE) has taken to complete deliverables identified in Revision 1 of the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-2 Implementation Plan and describes its plans to provide the DNFSB all remaining Recommendation 2004-2 deliverables.

**2. BACKGROUND**

On December 7, 2004, the DNFSB issued Recommendation 2004-2, *Active Confinement Systems*, which identified concerns with DOE's approach for preventing the release of radioactive material from its nuclear facilities. The Board's primary concern was that, for the purpose of confining radioactive materials, an active facility-level ventilation system should be designed to safety class or safety significant criteria.

The Department issued its Implementation Plan in August 2005 (with Revision 1 issued July 2006), which outlined actions to be taken to address the DNFSB concerns identified in the Recommendation. Table 1 provides a status of these actions.

**3. STATUS**

As listed in Table 1, the actions necessary to establish the infrastructure for performing facility-specific confinement ventilation system evaluations have been completed and most of the facility-specific evaluations have been completed.

The National Nuclear Security Administration (NNSA) and the Office of Environmental Management (EM) have committed significant resources in performing the facility-specific confinement ventilation evaluations following the methodology specified in the 2004-2 Implementation Plan. A vast majority (all but a few of the approximately 50 evaluations) have been completed.

Program Secretarial Office and Independent Review Panel (IRP) reviews of the facility-specific ventilation evaluations identified some concerns, which are some of the same concerns identified in the April 2009 DNFSB letter. The Program Secretarial Offices have been working with the Field Offices and their contractors

to address these concerns, and most of the ventilation system evaluations with the identified issues have been revised and resubmitted.

These evaluations, in almost all cases, confirmed that confinement ventilation systems were appropriately designed in accordance with the functionality identified in the documented safety analysis requirements. However, as anticipated, some facility evaluations identified significant gaps against the evaluation criteria because, in most cases, those facilities were not designed to utilize active confinement ventilation as a safety control. Rather, other controls were utilized to ensure public and worker safety in accordance with DOE safety requirements for nuclear safety basis development and facility design. In most cases, DOE contractor and Field Office review of these facilities indicated that the costs of proposed modifications to address identified gaps were not justified by incremental safety benefit given the existence of other safety controls in place to prevent and/or mitigate postulated events. DOE Program Secretarial Offices are currently reviewing these evaluations and, in all cases reviewed to date, support these conclusions.

DOE continues to make progress and is committed to completing the facility ventilation evaluation deliverables, with appropriate adjustments, as detailed below.

With regard to modification of its Directives, DOE has considered several options for including the expectation, as stated in the Revision 1 of the Implementation Plan, that active facility confinement is the preferred design approach unless another approach is technically justified. In particular, the Department considered whether adding a new Order requirement or providing new guidance to clarify DOE expectations for implementing existing confinement system requirement was preferred. DOE has concluded that revising DOE Guide 420.1-1, *Nonreactor Nuclear Safety Design Criteria and Explosive Safety Criteria Guide for Use With DOE Order 420.1, Facility Safety*, to clarify expectations for implementing existing confinement design requirements is the preferred approach because:

- it clearly articulates the Department's preference for use of active confinement systems;
- it provides the most appropriate directive document to describe the analysis and identify the necessary criteria to technically justify not selecting active confinement systems; and
- it is consistent with DOE's Directives principles as incorporated into DOE Order 251.1C, *Department Directives Program*.

Modifying DOE Guide 420.1-1 will result in DOE meeting the objective, as stated in the Implementation Plan for DNFSB Recommendation 2004-2, to utilize active confinement ventilation as its preferred approach.

DOE is currently revising this Directive to reflect this expectation, as well as updating it to reflect the issuance of DOE Standard 1189, *Integration of Safety into the Design Process*, and DOE Standard 1189's incorporation as a requirement in DOE Order 413.3A, Change 1, *Program and Project Management for the Acquisition of Capital Assets*, and DOE Order 420.1B, *Facility Safety*.

#### **4. ACTIONS TO COMPLETE 2004-2 DELIVERABLES AND REMEDIATE DEVIATIONS**

DOE commits to take the following actions to complete the DNFSB Recommendation 2004-2 Deliverables:

- NNSA will submit the completed ventilation reports for existing facilities, which are currently under NNSA Headquarters review by September 30, 2009. (Deliverables 8.5.1 and 8.6.3)
- NNSA will evaluate the remaining two new nuclear facilities under design in accordance with the DOE Standard 1189 process and will incorporate active confinement ventilation as part of the facility confinement strategy unless another approach is technically justified. This approach will achieve that same objective as identified in the DNFSB Recommendation 2004-2 Implementation Plan in a more efficient manner (consistent with the process identified in DOE Standard 1189 which was issued after Recommendation 2004-2 was issued). The ventilation system performance criteria that were developed to support ventilation system reviews will be utilized to support the new facility ventilation design development. (This modifies Deliverable 8.6.3 such that a separate facility-specific confinement ventilation report will not be developed for these new facilities.)
- EM and NNSA will complete the review of their respective site evaluation reports to ensure that they appropriately reflect the ventilation system guidance (including the review criteria) and that an evaluation of the cost/benefit of proposed modifications to close any gaps between the facility ventilation capabilities and the guide's review criteria was performed. The results will be forwarded to you by December 31, 2009. (Deliverable 8.6.5)
- HSS will modify DOE Guide 420.1-1 (modification begun), and will have it ready for complex-wide RevCom review by August, 2009, and will issue it by March 31, 2010. (Deliverables 8.5.5 and 8.6.4)

#### **5. SUMMARY**

DOE has expended considerable resources in developing confinement ventilation design review guidance and performing facility specific evaluations. These evaluations, in most cases, confirmed that confinement ventilation systems were appropriately designed in accordance with the functionality credited in the documented safety analysis. However, in some cases, the evaluation found that the confinement ventilation systems did not meet the criteria in the ventilation system evaluation guide because the guide was developed under the premise that an active confinement system would be utilized as a mitigative control. DOE's initial evaluation of these situations has determined that backfit of the facility to add active confinement was not necessary to protect workers and the public and was not cost effective. This is because other, more appropriate, controls are relied upon for mitigating events (e.g., fire protection design features at Pantex).

Very few Program Office reviews of site reports remain to be completed. DOE is committed to complete all the remaining site evaluation deliverables by the end of 2009. DOE has already begun to formally incorporate guidance for utilization of active confinement systems in its directive system as a preferred approach and expects to complete this effort by March 31, 2010.

**Table 1**  
**DNFSB RECOMMENDATION 2004-2**  
**IMPLEMENTATION PLAN DELIVERABLES**

<b>ID</b>	<b>Deliverable</b>	<b>Due Date</b>	<b>Date Completed</b>
8.1	Listing of New Facilities and Facilities Undergoing Major Modification	9-30-2005	9-30-2005
8.2	<i>Recommendation 2004-2 Exclusion Reporting Process</i>	10-30-2005	10-31-2005
8.3	Completed <i>Recommendation 2004-2 Exclusion Reports</i>	12-30-2005	12-29-2005
8.4	<i>Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System</i>	1-31-2006	3-7-2006
8.5.1	Plutonium Facility (PF-4) Safety Related Ventilation System Evaluation Report	12-21-2006	Rev 1: Nov 2006 Rev 2: Sep 2008
8.5.2	Assemble group of subject matter experts to develop ventilation review guidance	9-23-2005	9-20-2005
8.5.3	Hold workshop to develop review guidance	10-21-2005	10-18-2005
8.5.4	Develop review guidance	12-16-2005	2-2-2006
8.5.5	Develop new or revised draft evaluation guidance or guidance for DOE directives or rules and issue for DOE-wide review	11-30-2006	3-6-2007
8.6.1	Listing of facilities that will complete a Ventilation System Evaluation	7-14-2006	3-7-2006, 7-14-2006
8.6.2	Establish the Independent Review Panel	7-14-2006	8-1-2006
8.6.3	Site offices complete facility-specific evaluation reports		
	- Pilot Facilities	9-30-2006	December 2006
	- High Priority Facility with an Accelerated Schedule	12-21-2006	See Note 1
	- High Priority Facilities	6-6-2007	See Note 2
	- Medium Priority Facilities	9-6-2007	See Note 3
	- Low Priority Facilities	12-6-2007	See Note 4
8.6.4	Revise, as necessary, the Ventilation System Evaluation Guidance	10-31-2006	3-6-2007
8.6.5	PSO concurrence and approval on disposition of gaps and upgrades		
	- Pilot Facilities	1-15-2007	February 2007
	- All others	90 days after receiving facility report	
8.9.1	Review site procedures and safety bases mechanisms for using 25 rem evaluation guideline	3-31-2007	EM: 3-23-07 NNSA: 11-2-07
8.9.2	Revised DOE directives/technical standards into RevCom	See Note 5	On schedule

**Notes**

1. The only facility in this category is the PF-4 facility, which has been completed and is under NNSA review.
2. All initial drafts completed as of July 2008 except for two facilities. Four reports are not yet final.
3. All funded projects but one complete as of August 2008. Two facilities have not been funded.
4. All completed as of April 2009 except for one facility whose safety analysis is under development and two reports that are not yet final.
5. Revision to be completed 60 days after all ventilation reports are complete.