



Department of Energy
National Nuclear Security Administration
Washington, DC 20585



June 30, 2010

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W., Suite 700
Washington, D.C. 20004

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DNFSB SAFETY BOARD

Dear Mr. Chairman:

On December 29, 2005, the Department of Energy (DOE) transmitted Exclusion Reports for National Nuclear Security Administration (NNSA) and Office of Environmental Management (EM) facilities in accordance with Commitment 8.3 of the Implementation Plan (IP) for Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-2, *Active Confinement Systems*. Commitment 8.3 required a list of, and justification for, defense nuclear facilities that will be excluded from further review of confinement systems under the IP. Commitment 8.6.3 consisted of facility-specific confinement ventilation system (CVS) evaluation reports.

On June 2, 2008, NNSA provided to the DNFSB updates to the facilities that will complete a Safety-Related Ventilation System Evaluation as well as additional Exclusion Reports. NNSA has identified one additional facility, Sandia National Laboratories (SNL) Gamma Irradiation Facility (GIF), for which an Exclusion Report is considered appropriate. GIF is the last NNSA facility requiring an Exclusion Report.

Accordingly, NNSA has prepared the enclosed Exclusion Report for GIF to be included with those provided in response to Commitment 8.3. The report was developed in accordance with the 2004-2 exclusion reporting process and has been signed by the Sandia Site Office, Central Technical Authority, and the Program Secretarial Office as required.

Currently, the SNL Auxiliary Hot Cell Facility (AHCF) is not operational. To support future operations at the AHCF, SNL is implementing additional controls to ensure adequate confinement of radioactive material. AHCF will use critical lifts to hoist all containers of radiological material that exceed Hazard Category 3 material limits into the hot cell. Containers that require opening prior to loading into the hot cell will have radiological confinement. The Documented Safety Analysis for the AHCF will assess the confinement strategy and controls. The preceding



actions for the GIF and AHCF address and close out Commitments 8.3, and 8.6.1, respectively.

If you have any questions, please contact Mr. James McConnell, Assistant Deputy Administrator for Nuclear Safety and Operations, at (202) 586-4379.

Sincerely,

A handwritten signature in black ink, appearing to read "Don Cook", with a long horizontal stroke extending to the right.

DONALD L. COOK
Deputy Administrator
for Defense Programs

Enclosure

cc: D. Nichols, NA-2.1
J. McConnell, NA-17
M. Whitaker, HS-1.1
R. McMorland, HS-1.1
P. Wagner, SSO
K. Davis, SSO
J. O'Brien, HSS

SEPARATION

PAGE



National Nuclear Security Administration

Sandia Site Office
P.O. Box 5400
Albuquerque, New Mexico 87185-5400



APR 14 2010

MEMORANDUM FOR: James J. McConnell, Assistant Deputy Administrator,
Office of Nuclear Safety and Operations,
NA-17, HQ/FORS

FROM:

Patty Wagner, Manager *for*

SUBJECT:

Request for Exclusion from the Performance of the
Confinement Ventilation System Evaluation for the Gamma
Irradiation Facility (GIF)

REFERENCES:

- 1) Memorandum D'Agostino/Wagner dated December 6, 2006,
*"National Nuclear Security Administration (NNSA) Expectations
for Performing the Ventilation System Evaluations of Commitment
8.6 of the Implementation Plan for Defense Nuclear Facilities
Safety Board Recommendation 2004-2, Active Confinement
Systems"*
- 2) Memorandum Davis/McConnell, dated April 14, 2009,
*"Ventilation System Evaluation for the Gamma Irradiation
Facility (GIF)"*
- 3) Letter Black/Eggenberger, dated October 31, 2005,
"Transmittal of 2004-2 Exclusion Reporting Process"

The Sandia Site Office (SSO) was tasked to complete a facility-specific confinement ventilation evaluation for the GIF Reference (1) (Ref.)

A confinement ventilation review was prepared and provided to the Department of Energy Headquarters (DOE/HQ) for review Ref. (2). After reviewing HQ comments on the initial evaluation and based on a new initiative to remove all non-certified sealed cobalt 60 sources from the GIF pool, it was decided that an exclusion was most appropriate. The GIF is a Hazard Category 3 (HC3) nuclear facility, because of the presence of non-certified sealed sources containing approximately 27 kilocuries of cobalt 60. The non-certified sources will be removed within the next two years. Once completed, GIF will no longer be a HC3 facility, thus no longer requiring a ventilation analysis. Additionally, there is no credible accident that would allow for material to be released from the sealed sources stored in the GIF pool, which would require confinement ventilation. A beyond design basis accident causing drainage of the pool and further exposing the sources creating additional insults sufficient to release the cobalt 60 from the certified source pins, would be required to get to the point of needing a confinement ventilation system. Any conceivable accident capable of causing this release would already have destroyed the building making a ventilation system useless.

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Due to these factors, the SSO is requesting an exclusion from the performance of the confinement ventilation evaluation for the GIF. This is in accordance with the non-beneficial exclusion criterion NB-5 (Ref. 3). The SSO believes that the performance of a ventilation evaluation for the GIF, that has a limited life as a HC3 nuclear facility, would not be cost beneficial to the NNSA. Please process the attached Exclusion Report for the GIF.

Should you have any questions regarding this correspondence, please feel free to contact me at (505) 845-6036 or James Todd of my staff at (505) 845-4961.

Attachment:

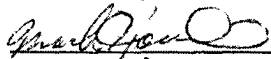
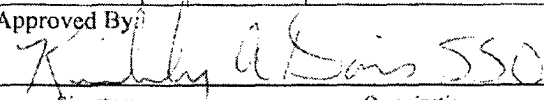
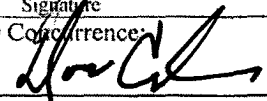
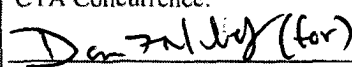
Sandia National Laboratories – Exclusion Report (Supplemental)

cc w/attachment:

W. White, HQ, NA-171.2
P. Raglin, SNL/NM, MS-1145
K. Davis, SSO
D. Brunell, SSO
J. Todd, SSO
M. Ortega, SSO
J. Muñoz, SSO
L. Linik, SSO
10-026-AMFO

Sandia National Laboratory – Exclusion Report (Supplemental)

Facility Segment/ Section	Hazard Category	Description	Exclusion Criteria	Comments Justification
Gamma Irradiation Facility (GIF)	HC3	The GIF is an operating gamma irradiation facility that uses sealed solid form Co-60 sources to provide an ionizing radiation field for testing and experimentation. The GIF will be operated as a Hazard Category 3 nuclear facility for a <u>limited period of time</u> under a 10 CFR 830 compliant Documented Safety Analysis (DSA).	NB-5	<p>Approximately 27 kilocuries of the Co-60 source inventory (out of 320 kilocuries total) do not have the documentation necessary to demonstrate compliance with 49 CFR 173.436 (CFR 1991) or American Standards Institute (ANSI) N43.6 (ANSI 1990) as certified sealed sources. The non-certified, sealed source inventory is the sole reason that the facility was classified as HC3.</p> <p>A goal has been set to begin removal of the non-certified sources no later than 2011. The fiscal year 2010 Performance Evaluation Plan Performance Measure 5.1 states:</p> <p>“5.1.6 Sandia will develop a plan and cost estimate to remove non-ANSI standard certified sources from the Gamma Irradiation Facility (GIF) leading to nonnuclear reclassification of the facility per DOE Standard 1027 by the end of March 2010. Removal of sources will begin as soon as possible but no later than FY 2011.”</p> <p>Upon completion of the removal campaign the GIF will have no HC3 material and be reclassified as a radiological facility.</p> <p>Additionally, there is no credible accident for material to be released from the sealed sources stored in the GIF pool that would require confinement ventilation.</p> <p>References: “Fiscal Year 2010 Performance Evaluation</p>

			Plan For Sandia Corporation Management and Operation Of The Sandia National Laboratories", Contract DE-AC04-94-AL-85000, Revision 1, dated 9/28/09.		
			"Documented Safety Analysis (DSA) for the Gamma Irradiation Facility (GIF)", SAND2007-1358, Change Notice 3, 2008.		
Submitted By:			Approved By:		
	SANDIA SITE OFFICE	4/9/10		SSO	4/13/10
Signature	Organization	Date	Signature	Organization	Date
PSO Concurrence:			CTA Concurrence:		
	NA-10	6/30/10		NNSA/CTA	6/7/10
Signature	Organization	Date	Signature	Organization	Date

SEPARATION

PAGE



The Secretary of Energy
Washington, D.C. 20585

July 29, 2009

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



**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

ID	Deliverable	Due Date	Date Completed
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.