The Secretary of Energy
Washington, DC 20585

July 12, 2006

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

Dear Mr. Chairman:

Enclosed is a revised Department of Energy (DOE) Implementation Plan (IP) in response to the Defense Nuclear Facilities Safety Board Recommendation 2004-2, *Active Confinement Systems*. The changes in Revision 1 of the IP are summarized in the "Background" section of Revision 1.

This revision establishes a phased-in schedule for several commitments relating to confinement systems in the DOE complex. This phased-in schedule reflects an increased understanding of the time and resources that are needed at several DOE sites to effectively review new and existing facility active confinement ventilation systems (CVS) in accordance with the *Ventilation System Evaluation Guidance for Safety-Related and Non-Safety Related Systems* that was previously submitted as Deliverables 8.5.4 and 8.7. The Revision 1 schedule requires a review of facility CVS data and an evaluation of several pilot facilities prior to embarking on a DOE-wide review of facilities. This phased-in schedule will permit an early review of new facilities and higher priority existing facilities and a subsequent review of lesser priority facilities based on the lessons learned from the review of CVS data and strategies at the pilot facilities.

We believe that Revision 1 will more effectively and efficiently achieve the objectives of Recommendation 2004-2. Please contact me or Mr. C. Russell Shearer, Acting Assistant Secretary for Environment, Safety and Health, at 202-586-4693 if further information is needed.

Sincerely,

Samuel W. Bodman

Enclosure

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U. S. Department of Energy

Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2004-2

Active Confinement Systems

Washington, D.C. 20585

July 2006

Revision 1

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BACKGROUND:

Board Recommendation

On December 7, 2004, the Defense Nuclear Facilities Safety Board (Board) issued Recommendation 2004-2, *Active Confinement Systems*. Recommendation 2004-2 noted concerns with the safety system (safety-class or safety-significant) designation strategy utilized in or planned for several facilities to confine radioactive materials during or following accidents. The Board's main issue is that for the purpose of confining radioactive materials through a facility-level ventilation system, safety system designation should be based on the active safety function (forced air through a HEPA filter system). The Board is concerned that a passive confinement safety function may not be as effective as the active safety function in a few postulated accident scenarios.

In terms of justification of safety system designation, the Board believes in some instances there is a reliance on calculations that may not appropriately account for large uncertainties that are inherent in analyzing accident conditions. It specifically noted the uncertainty of the assumptions related to building leak path factors that are used to calculate the amount of radioactive materials that might escape a building following an accident. In addition, the Board is concerned that in some instances DOE sites may be using the evaluation guideline of 25 rem exposure at the site boundary as a design acceptance criterion for the performance of confinement systems and an allowable dose to the public, contrary to DOE-STD-3009 *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports* that states that the 25 rem evaluation guideline "is not to be treated as a design criterion."

The Board recommended that DOE disallow designation of passive systems for the purpose of performing the confinement safety function for all new and existing hazard category 2 and 3 defense nuclear facilities. The Board stated that active ventilation systems are expected to be classified as safety-class or safety-significant for hazard category 2 defense nuclear facilities. Exceptions to these requirements are to be approved at a level in DOE that ensures a consistent, conservative approach throughout the complex.

The Board recommended that all applicable DOE directives pertaining to the operation of existing facilities, design and construction of new facilities, and major modification to existing facilities be revised in accordance with the previous paragraph.

It was also recommended by the Board that existing facilities, on-going major modifications, and new design/construction projects be assessed to ensure that safety system designation pertaining to active confinement ventilation functions described above is implemented. In addition, the review should ensure that the 25 rem evaluation guideline is used solely for classification of safety controls.

Secretary Acceptance Response

On March 18, 2005, the Secretary accepted Board Recommendation 2004-2. The Secretary stated that the Department agrees with the Board that DOE cannot rely solely

on passive building confinement when such reliance cannot be justified. The Department agreed that active building ventilation confinement systems can provide added safety benefit and are normally the preferred alternative when a building confinement safety function is needed to provide adequate protection to the public or collocated workers. The Recommendation was accepted based upon the understanding that it can be implemented as follows: DOE will proceed to review all hazard category 2 and 3 defense nuclear facilities. The review criteria will be based in large part on the Department's existing regulatory infrastructure, requirements, and methodologies established in 10 CFR Part 830, DOE Order 420.1A, DOE-STD-3009, and related guidance documents. First, DOE will establish criteria to exclude certain facilities and operations from further review based on sound safety considerations. The Secretary's response stated that facilities not excluded by these criteria would be reviewed to ensure that the selected confinement strategy is properly justified and documented. Priority would be given to design and construction projects, including ongoing major modifications of existing facilities.

For facilities not excluded, this implementation plan directs that a system evaluation will be completed. The system evaluation is broken into two components -- one for those ventilation systems that are currently identified as safety related (safety class or safety significant), and one for those ventilation systems that are not safety related (note this may also include some facilities that do not have ventilation systems, see discussion below). The overall focus of these system evaluations will be to (a) verify that appropriate performance criteria are derived for ventilation systems, (b) verify that these systems can meet the performance criteria, if applicable, and (c) determine if any physical modifications are necessary to enhance safety performance. As necessary, the system evaluations will also include a determination of whether appropriate safety system designation has been made.

As part of the confinement system evaluation, DOE will develop a methodology to evaluate the cost-benefit considerations that are inherent in any DOE decision on potential system upgrades that may enhance performance. The intent of this effort is to provide DOE decision makers a way to focus on and prioritize those modifications to the active confinement ventilation system that are most likely to significantly improve their safety performance. Adequate protection of the public and workers will be evaluated in the first instance without regard to the cost of potential upgrades. Cost-benefit considerations will be applied only after the safety adequacy of existing confinement strategies has been assessed and approved by DOE.

Priority will be given to design and construction projects (new facilities), including ongoing major modifications of existing facilities. Sites will be instructed to perform their reviews on these facilities prior to existing facilities so as to minimize any potential impacts on the design and construction process. For existing facilities, the Department expects that completing this recommendation will demonstrate that a long history of requiring active confinement ventilation functions in defense nuclear facilities exists. It is the Department's general expectation that these continuously operating systems will function as intended for the large majority of off normal events or accident conditions. Notwithstanding this, the Department also recognizes the usefulness of ensuring that these confinement ventilation systems are reviewed to ensure their appropriate role from

a safety system functional perspective, and to determine if any system modifications are necessary and justified.

In the Secretary's response, it was stated that the Department understands the Board recommendation is based on a fundamental premise that a more prescriptive safety requirement is likely needed to institutionalize the application of these principles at defense nuclear facilities. DOE further committed to assessing the need to make changes to DOE directives after all facility-specific reviews are concluded and changes to the safety approach have been made where necessary.

DOE Implementation Plan and Revision

On August 22, 2005, the Department forwarded its Implementation Plan (IP) for this recommendation to the Board. The Board accepted the Department's IP on September 19, 2005. The DOE IP proposed a methodology for systematically reviewing the ventilation systems at each of the sites. That methodology is now established as the *Ventilation System Evaluation Guidance for Safety-Related and Non-Safety-Related Systems* (IP Deliverables 8.5.4 and 8.7). Certain facilities were excluded from further review in accordance with the *Recommendation 2004-2 Exclusion Report* (IP Deliverable 8.3). In addition, hazard category 3 defense nuclear facilities with an active confinement ventilation system were also excluded from further review and a listing of these facilities was provided to the Board (IP Deliverable 8.4).

Remaining hazard category 2 and 3 facilities will complete a confinement ventilation evaluation in accordance with the *Ventilation System Evaluation Guidance for Safety-Related and Non-Safety-Related Systems.* As a result of the development, review, and approval of the guidance document and a DOE-wide evaluation of the available resources available to do extensive confinement system evaluations, the Department determined that a revision to the IP review deliverables and schedules in Commitments 8.5, 8.6, 8.8 and 8.9 was needed. The changes and additions in this Revision 1 to the IP (April 2006) reflect the system evaluation process described in the Ventilation System Evaluation Guidance and other input. Specifically:

- The evaluation process must be phased and extended to account for (a) limited resources and expertise to do effective reviews at several sites with a large number of facilities to be evaluated, and (b) the priority of the facility to potentially benefit (e.g., schedule impact and risk reduction) from a system evaluation.

- The evaluation process will be piloted at several facilities prior to DOE-wide implementation. Lessons learned from these pilot evaluations will be captured and incorporated into the Ventilation System Evaluation Guidance document for subsequent system evaluations.

- The evaluation process will then focus on high priority facilities and, thereafter, medium and low priority facilities. An Independent Review Panel (IRP) will be formed to provide support for and consistency to the reviews. The IRP will be composed of DOE employees. The IRP will have access to technical experts,

working pursuant to consulting contracts, who will provide advice to the IRP. As necessary, the IRP will report to the 2004-2 Core Team and will interact with DOE line management to ensure that the reviews are completed in a timely manner and consistent with the Ventilation System Evaluation Guidance document. The Plutonium Facility (PF-4) at Los Alamos National Laboratory is one of the most important DOE facilities to which the recommendation would apply. This facility will be assessed as a high priority facility with an accelerated schedule.

- The Ventilation System Evaluation Guidance addresses both safety and non-safety related ventilation systems. Therefore, the deliverables under Commitment 8.8 of Revision 0 of the IP were incorporated into Commitment 8.6 of Revision 1 of the IP. Both safety and non-safety related ventilation systems will be evaluated on a schedule that is based on their priority as established by Deliverable 8.6.1.

- The commitments and deliverables associated with new directives are collapsed and consolidated in Deliverables 8.9.1 and 8.9.2. Deliverable 8.9.1, concerning a report on the use of the 25 rem evaluation guideline, is better defined and scheduled.

1. Definitions

Confinement – A building, building space, room, cell, glovebox, or other enclosed volume in which air supply and exhaust are controlled, and typically filtered. [DOE-HDBK-1169-2003]

Confinement System – The barrier and its associated systems (including ventilation) between areas containing hazardous materials and the environment or other areas in the facility that are normally expected to have levels of hazardous materials lower than allowable concentration limits.

High-Efficiency Particulate Air Filter or HEPA Filter – A throwaway extended-pleated-medium dry-type filter with (1) a rigid casing enclosing the full depth of the pleats, (2) a minimum particle removal efficiency of 99.97 percent for particles with a diameter of 0.3 micrometers, and (3) a maximum pressure drop of 1.0 in.wg. or 1.3 in.wg. when clean and operated at its rated airflow capacity. [DOE-HDBK-1169-2003]

Ventilation System – The ventilation system includes the total facilities required to supply air to, circulate air within, and remove air from a building/facility space by natural or mechanical means. [DOE-HDBK-1169-2003]

Confinement systems, including associated ventilation systems, need to effectively perform their required safety functions for the design basis accidents they are required to withstand. The decision to use an active or passive confinement feature should be based on the type of activity or event that is being confined by such a system. For ventilation systems the intended safety functions are typically active functions, to protect the confinement integrity of selected confinement barriers by providing the motive force that applies a negative pressure differential between areas of lower contamination to areas of higher contamination (what is intended by the term ***"active confinement ventilation system"***). In a like manner the terminology ***"passive confinement system"*** refers to the functional performance of selected barriers as related to passively (no motive force) confining (containing) hazardous materials. The focus for this implementation plan is on active confinement ventilation systems in a building that remove air via mechanical means.

2. Introduction

The Department is confident that defense nuclear facilities are being designed, built, and operated in a safe manner which provides a very conservative margin of safety for workers and the public. The performance of the Department in terms of nuclear safety over the years has been excellent. Over the past several years the complex has substantially improved the quality and technical adequacy of documented safety analyses (DSAs), and the identification and implementation of preventive and mitigative safety

features for defense nuclear facilities.[1] Notwithstanding improvements in recent years in analysis techniques and safety features, it is possible that this review effort will ultimately provide further insights and safety system designation strategies that will result in an overall improvement in the manner in which the Department designs, constructs, modifies, and operates defense nuclear facilities. These insights, strategies and techniques will be captured in revisions and improvements to DOE O 420.1A, *Facility Safety*, implementing guides and standards, as warranted.

For the Department's existing facilities, the reliability and effectiveness of ventilation systems, most of which were designed and installed years ago, have been matters of special attention by the Board and DOE for many years. Ventilation systems in many defense nuclear facilities provide important safety functions. Strong reliance on these systems is an integral part of protection of the public and workers against radiological hazards. This generally holds true whether or not the Department explicitly takes credit for these systems as part of addressing specific accidents in the DSA. The Department's overall position is that confinement ventilation systems play a key role in confining hazardous materials at defense nuclear facilities. The need to pay increased attention to the design and operational reliability of the confinement ventilation systems at defense nuclear facilities continues to be a high priority.

DOE and its contractors have expended significant resources over the years in formalizing expectations, establishing standards, improving system reliability, and institutionalizing assessment programs for confirming the reliability of ventilation systems. A partial discussion is provided to illustrate the Board's interest in this area, as well as the efforts of DOE and its contractors.

> In March 1995, the Board issued DNFSB/TECH-3, *Overview of Ventilation Systems at Selected DOE Plutonium Processing and Handling Facilities*, which addressed the design of confinement ventilation systems. In its June 15, 1995, letter forwarding that report, and in subsequent correspondence in July 1995, the Board requested that DOE evaluate the design, construction, operation, and maintenance of ventilation safety systems in terms of applicable DOE and industry standards.
>
> In its letter dated October 30, 1997, the Board pointed out several additional key issues associated with wetting of HEPA filters during tests of fire sprinkler systems, and the need for complex-wide guidance for DOE concerning the relationship between maintaining filter integrity and fire fighting strategies. In June 1999, the Board issued a technical report addressing DOE's infrastructure supporting effectiveness of HEPA filters, DNFSB/TECH-23 *HEPA Filters Used in the Department of Energy's Hazardous Facilities*. Additional Board technical reports, such as DNFSB/TECH-26 *Improving Operation and Performance of Confinement Ventilation Systems at Hazardous Facilities*, have been provided to DOE.

[1] The DSA for PF-4 at LANL is a notable exception. DOE/NNSA is placing a priority on developing a rule compliant DSA for PF-4. A proposed revision to the PF-4 DSA is underway. Once the DSA is submitted, an accelerated assessment of the high priority facility will be initiated.

On March 8, 2000, the Board issued Recommendation 2000-2, concerning the degrading conditions of vital safety systems and the capability to apply engineering expertise to maintain the configuration of these systems. Specifically, the Recommendation concluded that degradation of confinement ventilation system reliability and operability might be approaching unacceptable levels. In response, DOE developed an extensive implementation plan to baseline the operational readiness of safety systems (including ventilation systems), strengthen safety system expertise, and enhance the capability to routinely assess the condition of safety systems. While the Department's review identified several improvements related to strengthening configuration management programs with specific attention to system degradation, systemic degradation of confinement ventilation system reliability and operability was not found.

Throughout this period the Department has worked hard at improving the equipment, personnel, procedures and overall reliability of the confinement ventilation systems. Extensive assessments, corrective action plans, and new directives have been implemented over the years with the goal of improving system operability throughout the complex, such as the Recommendation 2000-2 Implementation Plan and the Department's report and action plan addressing issues raised in DNFSB/TECH-23. DOE completed the update of DOE-HDBK-1169-2003, *Nuclear Air Cleaning Handbook*, which provides comprehensive guidance for the design, construction, maintenance, testing and operation of confinement ventilation systems. The Department established federal safety system oversight programs and contractor system engineering programs, with the specific intent of improving overall system reliability and operability. DOE is in the process of implementing these programs at the sites.

3. Baseline Assumptions

The DOE-STD-3009, *Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports*, and DOE G 420.1-1, *Nonreactor Nuclear Safety Design Criteria and Explosive Safety Criteria Guide for use with DOE O 420.1, Facility Safety,* process for determining controls and functionally classifying them is fundamentally sound. Similarly, other DOE directives and guides associated with implementing nuclear safety are also adequate; however, clarification and amplification in certain areas may be needed. Specifically, the application of the off-site evaluation guideline will be reviewed to determine if additional guidance is necessary to ensure appropriate use of this guideline. The review process described in this implementation plan will assist DOE in determining the nature and extent of any changes.

4. Underlying Causes

In some situations there may be a misapplication of the Department's guidance at some facilities regarding confinement requirements and the analysis of accident consequences. DOE reviewers may not have always verified leak path factors claimed in the passive confinement analyses. In addition, DOE lacks specific guidance on analyzing existing

facility safety systems for functionality and safety upgrades. System Evaluation is a consideration in the review and approval of Documented Safety Analysis (see section 4.3.X.4 and 4.4.X.4 of DOE-STD-3009). As part of completing these system evaluations it is recognized that requiring explicit design reconstitution is not beneficial. However, it is not clear whether enough has been done to verify that the appropriate performance criteria were derived for confinement ventilation systems, with a subsequent verification that the performance criteria can be met. In meetings with the Board staff, the Department was encouraged to develop an overall approach that includes some type of assessment that considers current ventilation system design codes and standards as part of this verification.

5. Discussion

Hazardous operations at DOE facilities are typically located inside a confinement, versus a containment that is used in U.S. commercial nuclear power plants. The overall confinement function usually consists of the entire building structure and associated ventilation system(s). The building is maintained at a negative pressure relative to atmosphere by the ventilation system, which is an assortment of several subsystems that cascades the building negative air pressure from areas of lesser contamination to areas of greater contamination, with some intermediate contaminant removal via filtration. Prior to being exhausted from the building, the air undergoes filtration, sometimes through multiple stages of filters, such as prefilters, demisters, adsorbers, HEPA filters, and final filters. Air is supplied to the building by various air supply systems. Typically, air is supplied at a rate slightly less than it is exhausted, such that a vacuum can be maintained throughout the facility. Air may also "leak" into the building through door seals or penetrations and account for the mismatch between supply and exhaust. Various dampers and valves are usually employed to direct the air to specific locations. Theoretically, with the building maintained at a negative pressure relative to atmosphere, all of the air that enters the building should exit only after it is filtered during normal operating conditions and potentially during certain accident conditions.

From a safety system and safety function perspective, the Department recognizes that the Board desires a more prescriptive approach for designating confinement ventilation systems (inclusive of their active safety function) as safety-class or safety-significant for all non-excluded hazard category 2 defense nuclear facilities. Determination of the best way to address this perspective within the DOE directives system will be addressed as part of identifying the changes that may be necessary in DOE Orders, Guides, or Standards. In the interim, the Department will review all new facilities and facilities undergoing major modification from the perspective that a more prescriptive designation of safety systems may be needed.

As stated in the Secretary's acceptance of Recommendation 2004-2, the Department agrees with the Board that DOE cannot rely solely on passive building confinement, from a safety system designation and safety function perspective, when such reliance cannot be justified. Issues that can impact confinement performance and reliability include the following.

- Several factors may cause the facility to "breathe," or "exhale." "Breathing" can be caused by the diurnal sun cycle that leads to the heating and cooling of the building and consequent expansion and contraction of the building air. Since the building seeks to remain at atmospheric pressure, it will breathe, hopefully through a pre-established filtered pathway, to accommodate the expansion and contractions within the building. Changes in barometric pressure act in somewhat the same way.
- The building can "exhale" by several mechanisms. Fires can cause the air to exhale from the building, as can the release of compressed gases. Strong winds can create a vacuum on the leeward side of the building and pull air through various penetrations.
- Cracks and damaged confinement penetrations, particularly following an earthquake, can provide potential unfiltered leakage pathways. In addition, during a seismic event unsecured items (e.g., waste containers, tools, and equipment) could move and possibly endanger the confinement boundary. An important point here is the tradeoff between protecting the material at risk from damage during a seismic event, versus allowing certain release and providing for filtration. In some cases, upgrades to secure material are more safety beneficial and cost effective.
- Under normal conditions door seals will leak. If there is no impediment to in-flow during normal operations, there will be no impediment to out-flow during passive confinement conditions. Doors are also susceptible to permanent distortion resulting from seismic events, at the doorframe to building mounting as well as the door to the doorframe mounting. The amount of expected distortion and resultant leakage pathway should be taken into consideration in the safety basis. As discussed in the Board's recommendation, emergency response personnel entering and exiting a facility can produce substantial leakage pathways, possibly resulting in unfiltered releases of contaminants.
- Inlet and exhaust duct penetrations are another potential leakage pathway. As with doorways, the attachment of the ductwork to the structure represents a potential failure point that should be analyzed. In addition to the penetration itself, the extension of the ductwork into the facility also offers a potential bypass leakage pathway, as the skin of the ductwork is actually an inward (or outward) extension of the confinement boundary. This boundary should end with a testable isolation valve or a seismically designed filtration system. Obviously, all penetrations through the ductwork up to the point of isolation represent potential bypass leakage pathways and should be limited and testable. Potential problem areas include fan shaft seals, boots on fans, valve and damper shafts, instrument penetrations, and electrical penetrations.
- Besides bypass leakage considerations, another potential challenge to relying on passive systems to confine radioactive materials involves post-accident sampling. Without sample flow, installed instrumentation will not work. In addition, all the leakage cannot be directed past the monitor. The use of post-accident field sampling lacks accuracy and timeliness. There is no assurance

that the air being measured represents the total threat, and the time to gather and analyze a sample precludes a timely protective action response.

As the Secretary stated, DOE agrees that active confinement ventilation systems can provide added safety benefit and are normally the preferred alternative when a building confinement safety function is needed to provide adequate protection to the public or collocated workers. There are limitations of computational models and assumptions used for determining leak path factors when evaluating confinement performance. As a result, the Department agreed to perform another check at how safety system designation is implemented and assess the need for institutionalizing more prescriptive safety system requirements.

6. Summary of Completed and Near-Term Actions

As a result of Board Recommendation 2004-2, the Department is initiating a system evaluation of the confinement ventilation systems throughout the complex in order to identify those facilities where improvements may be warranted. Upon completion, the Department will use the results of this assessment and associated technical insights and safety bases information to determine the need for more prescriptive requirements regarding ventilation systems used in hazard category 2 and 3 defense nuclear facilities. To reiterate the Department's expectation – the highest level of priority should be given to new facilities and facilities undergoing a major modification to ensure an appropriate active confinement ventilation safety function is being designed, built, and maintained in accordance with established DOE standards and guides. New facilities and facilities undergoing major modification may only be excluded from this expectation based upon their proposed mission (e.g., tritium-only hazards, outside storage facilities) where an active confinement ventilation system is not needed, impractical or not effective. Completed commitments and deliverables from Revision 0 of the original 2004-2 Implementation Plan (IP) dated August 2005 are indicated in this Revision 1 (April 2006). Other revisions are made in Revision 1 to add clarity and currency to the IP and to better clarify DOE functions and responsibilities.

7. Methodology

The Department is committed to improving the overall reliability and operability of systems designed to confine hazardous materials during normal, off normal, and accident conditions. The ventilation system, an integral part of this confinement strategy, is of particular importance. The implementation plan methodology initially will screen out many of the Department's defense nuclear facilities to ensure resources are focused on those remaining facilities where potential opportunities for risk improvement may be realized.

Priority will be given to new facilities and facilities undergoing major modification. Therefore, the process for evaluating and reporting information, and the initiation of any corrective measures should be performed on these new/modified facilities prior to existing facilities. The methodology supports both new and existing defense nuclear

facilities; however, for new facilities the safety system designation and associated ventilation systems will be reviewed more expeditiously in order not to significantly impact mission and schedule.

Reference should be made to Figure 1 showing the process described in this implementation plan.

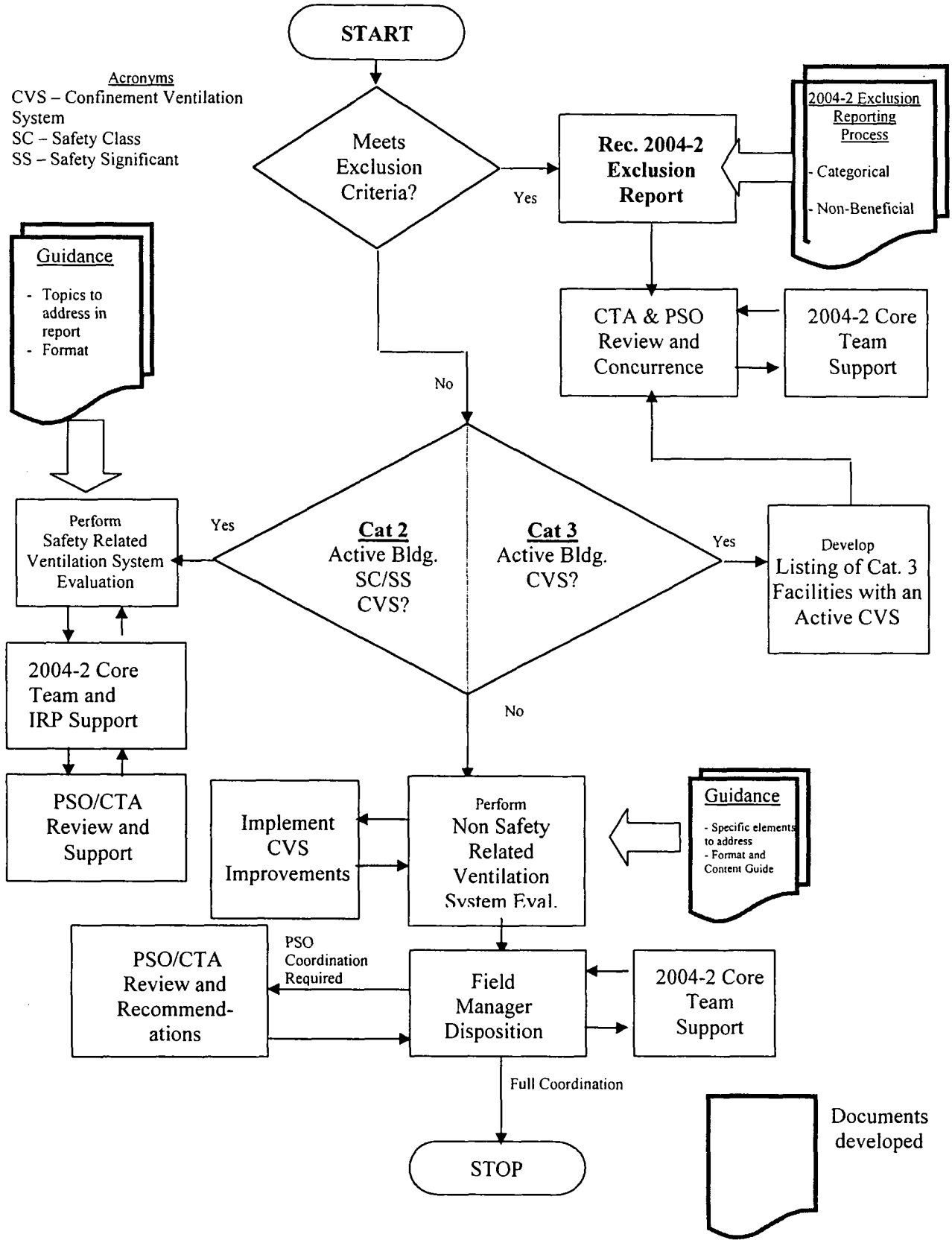

Figure 1 Recommendation 2004-2 Methodology

7.1 Overview of Activities

The overall methodology for satisfying the requirements of this implementation plan consists of specific actions and reports that may be required, based upon the mission, characteristics, hazard categorization, and existing confinement ventilation system currently in-place for a particular facility. Each of the deliverables will be discussed in detail. In support of these tasks, the 2004-2 Core Team (with advice from the IRP as discussed below) will issue specific documents that provide guidance and the process for completion of the various reports, evaluations, and listings. The primary responsibility for executing the work under this IP and submitting documents for review and approval will be field management. The documents field management will submit consist of:

- **Recommendation 2004-2 Exclusion Report** – This report is a listing of facilities that are excluded from further evaluation under this implementation plan based upon meeting Categorical Exclusion (CE) criteria or Non-Beneficial (NB) criteria. This report is addressed further in Section 7.4 *Recommendation 2004-2 Exclusion Report.*
- **Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System** – This facility listing identifies new and existing hazard category 3 facilities with an active confinement ventilation system that were not excluded in the site's *Recommendation 2004-2 Exclusion Report.* This listing is addressed further in Section 7.5 *Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System.*
- **Safety Related Ventilation System Evaluation.** This facility-level report identifies the safety related ventilation system safety functions, functional requirements, and performance criteria addressed in the DSA. A system evaluation will be completed to verify that appropriate performance criteria have been derived, and to verify that the identified system can meet these performance criteria. The system evaluation will also identify, as appropriate, those value added physical modifications that may be necessary. As outlined below (see Section 7.6), the system evaluation will also include a consideration of the current ventilation system codes and standards as part of developing a workable list of performance and/or design expectations. This report is addressed further in Section 7.6 *Safety Related Ventilation System Evaluation.*
- **Non Safety Related Ventilation System Evaluation.** This facility-level report is applicable to the following facilities:

  (1) Facilities that were not excluded in the site's *Recommendation 2004-2 Exclusion Report,*

  (2) Hazard category 2 facilities that do not have a safety-class or safety-significant confinement ventilation system, and

(3) Hazard category 3 facilities that do not have confinement ventilation systems.

Because these facilities either lack physical ventilation systems, or lack designation of these systems as safety related, the initial focus of this evaluation will be to determine if safety system designation changes are needed. With respect to appropriate system evaluation, this will use the same overall approach developed to assess safety related ventilation systems. This report is addressed further in Section 7.7 *Non Safety Related Ventilation System Evaluation.* Revision 1 of this IP combines both safety and non-safety related ventilation system evaluations based on the evaluation schedules established pursuant to their facility priority listing under Deliverable 8.6.1.

7.2 Recommendation 2004-2 Core Team

A Recommendation 2004-2 Core Team Charter formalizes the composition and responsibilities of the team. The Core Team will organize the IRP and both will work closely with the appropriate Central Technical Authority (CTA) (as established under Board Recommendation 2004-1) and Program Secretarial Offices (PSOs) to ensure concerns and issues are appropriately addressed. The 2004-2 Core Team, with advice from the IRP, will provide support and technical expertise to the field to coordinate the overall DOE response to this recommendation. The 2004-2 Core Team and IRP will ensure consistent and timely completion of the various 2004-2 Implementation Plan deliverables listed below, and provide feedback to the Board in matters pertaining to successful completion of this plan. The CTA and PSO representation on the Core Team will provide continuity and consistency, and will facilitate review and coordination of guidance and deliverables from their respective PSO organizations.

The composition of the Core Team and IRP will be based on input and concurrence from appropriate CTAs and PSOs. As Chairperson, the Director, Office of Nuclear and Facility Safety Policy and the PSOs will consider the following qualifications (knowledge or experience) when selecting and assigning core team members:

- Nuclear safety basis requirements, including 10 CFR Part 830, DOE-STD-3009, and DOE Order 420.1A
- Defense nuclear facility confinement ventilation systems
- Computer codes used for modeling conditions following certain accidents
- Leak path factors and associated computer codes for calculating
- Defense nuclear facility design requirements
- Defense nuclear facility operations and maintenance
- Back fit and cost-benefit analysis

7.3 *Listing of New Facilities and Facilities Undergoing Major Modification*

One of the first actions taken was to accurately identify new hazard category 2 and 3 defense nuclear facilities, including those undergoing major modification. This listing ensured the facilities listed were given the highest priority in completing the activities addressed by this implementation plan. The *Listing of New Facilities and Facilities Undergoing Major Modification* is Commitment 8.1. This commitment was completed and the listing was provided to the Board on September 30, 2005.

7.4 *Recommendation 2004-2 Exclusion Report*

Using a *Recommendation 2004-2 Exclusion Report*, defense nuclear facilities that can be categorically excluded by site or field offices from the analysis as a result of the nature of their operations were eliminated from further consideration. The development of these exclusion criteria was based on sound safety considerations, and was provided to the sites in the *Recommendation 2004-2 Exclusion Reporting Process* (Commitment 8.2). This commitment was completed and the reporting process was provided to the Board on October 31, 2005.

As acknowledged by the Board, certain hazard category 2 and 3 defense nuclear facilities would not benefit from a confinement ventilation system and can be excluded based upon Categorical Exclusion (CE) criteria. Examples include facilities that store radioactive material in protected, safety-class containers, tritium facilities, outside storage locations, and burial grounds. The CE criteria were developed in the *Recommendation 2004-2 Exclusion Reporting Process*.

Some facilities with planned declining nuclear material inventories and which are scheduled for decommissioning in the near future or because of their life cycle stage considerations can be excluded based upon Non-Beneficial (NB) criteria. In addition, the existing facilities that utilize once-through process ventilation systems, such as many aspects of the Tank Farm facilities at Hanford and Savannah River sites, would be considered for exclusion under the NB criteria. New facilities and facilities undergoing major modification cannot be excluded from further review based on only NB criteria. The NB criteria were developed in the *Recommendation 2004-2 Exclusion Reporting Process.*

The appropriate site or field office reviewed and approved the site's *Recommendation 2004-2 Exclusion Report* (Commitment 8.3). This commitment was completed and the site reports were provided to the Board on December 29, 2005.

7.5 *Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System*

For hazard category 3 defense nuclear facilities with an active confinement ventilation system that are not excluded in the *Recommendation 2004-2 Exclusion Report*, a facility listing was prepared and submitted for site or field office review

and approval. The appropriate CTA and PSO reviewed this listing and provided concurrence. No further evaluation as part of this implementation plan is required for these facilities since these facilities have only localized consequences, and therefore, the safety function of a ventilation system is primarily for in-facility workers, not as a confinement for protection of collocated workers. The *Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System* is Commitment 8.4. This commitment was completed and the listing was provided to the Board on March 7, 2006.

7.6 Safety Related Ventilation System Evaluation

For hazard category 2 defense nuclear facilities that have a safety-class or safety-significant building confinement ventilation system that performs an active safety function, a *Safety Related Ventilation System Evaluation* will be required. This applies to both new and existing facilities. This facility-level review will verify that the performance criteria identified for the ventilation system in the related DSAs are appropriate, and can be met. This facility review will accomplish the Secretary's stated intent in his March 18, 2005 acceptance letter for Recommendation 2004-2 that facilities not excluded will be reviewed to ensure that the selected confinement strategy is properly justified and documented. As part of this assessment a determination will be made whether the installed system requires modification or upgrade. The basic approach for the system evaluation will be in accordance with the requirements in DOE-STD-3009, sections 4.3.X.4 and 4.4.X.4, but with an explicit consideration of current ventilation system codes and standards. An outline for this assessment is discussed below. This evaluation intentionally is not labeled a formal design adequacy evaluation for two reasons: (1) in order not to imply that any type of design reconstitution is necessary, and (2) as discussed below, formal line-by-line codes and standard comparison is not necessary.

The overall intent for completing these system evaluations is to (a) verify that ventilation system performance criteria are appropriately derived, (b) verify that the criteria are met, and (c) explicitly assess the need for value added improvements and upgrades to improve or ensure adequate performance of ventilation system safety functions. While this does not preclude identifying changes to procedures, equipment, and training, the focus will be on adequacy of the physical ventilation system. In addition, the system evaluation will also reaffirm the functional classification of the SSCs associated with the confinement ventilation safety functions. Safety significant and safety class SSCs will be reviewed to determine if their designation was appropriate.

On February 2, 2006, the 2004-2 Core Team issued a guidance document *(Ventilation System Evaluation Guidance for Safety-Related and Non-Safety-Related Systems)* to the sites that amplifies specific topics to be addressed in each facility *Safety Related Ventilation System Evaluation* (Deliverable 8.6.3). This guidance document will be revised based on the results and lessons learned from the pilot facility evaluations and be the basis for any changes to DOE directives as

outlined in Section 7.8 below. The overall challenge is to integrate the use of current ventilation system design codes and standards into the overall approach for verifying that ventilation system performance criteria are properly defined and met. The Department will proceed along this path with the intent that such an exercise may reinforce performance expectations for ventilation systems. This may include physical upgrades and modification to these systems if they cannot achieve the appropriate performance expectations.

To prepare the evaluation guidance, the Core Team assembled a subject matter expert group to review the ventilation system design criteria, codes and standards contained in DOE G 420.1-1, the DOE Nuclear Air Cleaning Handbook, and associated appropriate DOE Standards. The subject matter expert group is composed of Federal employees and current employees of DOE's management and operating contractors. The subject matter expert group reviewed the ventilation system codes and standards to understand and identify differences between those that would be derived for a non-safety related design versus a safety related design. Based on this review, a reasonable, workable list of generic ventilation system performance and/or design attributes was developed. These performance and/or design attributes would result in appropriate performance expectations for evaluating ventilation systems against safety functional requirements defined in facility-specific DSAs, including system requirements to perform during abnormal and accident conditions as established in the DSAs. [2]

To ensure that this represents a workable approach, and to identify an adequate set of performance and/or design attributes, the Department held a workshop to review the material developed by the subject matter expert group. The overall objective for the workshop was to develop the approach to be used to complete facility specific system evaluations. This workshop was necessary to ensure that the approach developed avoids unnecessary repetition of DSA work and/or safety system operability reviews, and focus on appropriate physical aspects of confinement ventilation systems.

In addition to a set of performance and/or design attributes derived from current codes and standards, the workshop also provided a forum to develop a methodology to evaluate the cost-benefit considerations that are inherent in any DOE decision on potential system upgrades that may enhance performance. The intent of this effort was to provide focus on and prioritize those modifications to the active confinement ventilation system that are most likely to significantly improve their safety performance. Cost-benefit considerations will not be applied, however, to assess the safety adequacy of existing confinement strategies. Adequate protection of the public and workers will be evaluated in the first instance without regard to the cost of potential upgrades. All workshop deliverables were reviewed and approved by appropriate PSOs and CTAs prior to facility-specific use.

[2] The existing PF-4 DSA is out of date. The proposed revision to the DSA, which will be submitted shortly, will serve as the basis for the evaluation for PF-4, not the existing DSA.

The facility specific system evaluation will first identify the safety functions, functional requirements, and performance criteria for safety related ventilation systems from the DSA. As necessary, assumptions regarding leak path factor will be identified at this stage. The evaluation will then explicitly consider all of the generic performance and/or design expectations, but with an initial screen that appropriately eliminates those expectations associated with specific accident conditions that are not significant from a release standpoint for the specific facility being assessed. For example, if the active ventilation system is not credited in a seismic accident condition there is no need to evaluate a seismic performance and/or design attribute for the ventilation system. Also, any seismic impact on the confinement ventilation system performance will be based on the current seismic analysis in the DSA.

For generic ventilation system performance and/or design expectations that are not screened out, a system evaluation will be completed, judging the existing ventilation system against the intended generic performance and/or design expectations developed by the Core Team. As noted above, this evaluation will not require design reconstitution but rather, using available data, engineering judgments supported by sound technical justification and/or calculations will be made regarding the ability of the existing ventilation system to meet these expectations with sufficient confidence. The system evaluation will explicitly assess the need for any system upgrades, using the consistent cost-benefit method developed as a result of the workshop. The system evaluation may also result in recommended changes to procedures or other administrative actions.

The above outline will be applied to a few facilities (at least one each from NNSA and EM) as a pilot to gain additional confidence on consistent and efficient application. As part of meeting commitment 8.6, the Department will sequence facilities in series based on the priority of the facility from a risk reduction standpoint. A listing of the priority of facilities will be provided as Deliverable 8.6.1.

The appropriate site or field office will review and approve each *Safety Related Ventilation System Evaluation* after interactions and coordination with the CTA and PSO to ensure consistency and responsiveness of evaluations, and PSO approval of required actions, as appropriate. The 2004-2 Core Team and the IRP will monitor the evaluations and provide support and consultation as needed or requested for these evaluations.

7.7 Non Safety Related Ventilation System Evaluation

The following facilities will be required to prepare a *Non Safety Related Ventilation System Evaluation* (note that this applies to both new and existing facilities and this Revision 0 IP Commitment 8.8 is now merged in Commitment 8.6 and reviewed based on the priority listing):

- Hazard category 2 defense nuclear facilities that do <u>not</u> have safety-class or safety-significant confinement ventilation systems that perform an

active safety function and that are not excluded in the *Recommendation 2004-2 Exclusion Report.*

- Hazard category 3 defense nuclear facilities that do not have active confinement ventilation systems and that are not excluded in the *Recommendation 2004-2 Exclusion Report.*

Each site or field office will initially prepare a report explaining their existing confinement approach because these facilities either lack physical ventilation systems, or lack designation of these systems as safety related. Thus, the initial focus will be to determine if safety system designation changes are needed.

Similar to the *Safety Related Ventilation System Evaluation*, hazard category 2 facilities will complete a ventilation system evaluation to determine if physical upgrades are needed and justified. Given that these systems are not safety related, the use of defined functional requirements and performance criteria is not possible. Surrogate performance criteria will need to be defined for these systems so that the overall approach using the Ventilation System Evaluation Guidance is consistent. For hazard category 2 facilities the decision not to designate ventilation system SSCs as safety-related will be closely reviewed and documented. Consistent with the reviews of safety related ventilation systems described in Section 7.6, these evaluations will uphold the Secretary's commitment that "DOE cannot rely solely on passive building confinement when such reliance cannot be justified."

Also similar to the *Safety Related Ventilation System Evaluation*, this review may identify areas for improving the performance expectations of the ventilation system. These recommendations also will be documented in the *Non Safety Related Ventilation System Evaluation*. After interaction and coordination with the CTA and PSO organizations, the appropriate site or field office will review and approve each *Non Safety Related Ventilation System Evaluation* and send to the DNFSB. Discussions and interactions between the CTA, PSO, and site personnel will result in a final report, encompassing the agreed upon set of system modifications and upgrades, if any. The 2004-2 Core Team and the IRP will monitor and provide support and consultation. The development of this *Non Safety Related Ventilation System Evaluation* may cause the facility management to implement changes in safety basis documents, hardware, compensatory measures, or other areas. These are to be addressed in the *Non Safety Related Ventilation System Evaluation*, along with anticipated completion dates.

7.8 Directives Review and Lessons Learned

The 2004-2 Core Team will evaluate the need for changes to DOE guidance documents or other directives in two steps. After completion of the pilot evaluations and any necessary revisions to the Ventilation System Evaluation Guidance document under Deliverable 8.6.4, the 2004-2 Core Team will draft any proposed revisions to DOE directives that are necessary to improve new designs and the efficacy of ongoing system evaluations and submit them for DOE-wide review and comment. (Deliverable 8.5.5) After receiving comments from the

draft directives and reviewing results from completed and ongoing evaluations, including results of use of 25 rem evaluation guidance (Deliverable 8.9.1), plans will be further developed for implementing any needed directive changes (Commitment 8.9.2). This evaluation will consider changes to DOE G 420.1-1, *The DOE Nuclear Air Cleaning Handbook*, regarding the application of the evaluation guideline for designation of safety systems for new facilities and major modifications to existing facilities. It is possible that more prescriptive safety directives and institutionalizing the application of these principles at defense nuclear facilities will be necessary. The Office of Nuclear and Facility Safety Policy (EH-22) will be responsible for developing any necessary revisions to DOE directives. Any proposed revisions will be vetted through the 2004-2 Core Team and the Board and technical staff before issuing for DOE-wide directive review and comment.

7.9 Reporting

Throughout this process, DOE will provide periodic briefings and reports to the Board on the status and results of the actions addressed in this implementation plan (Commitment 10.1).

8. Implementation

Two workshops were held in April-May 2005 with senior Department personnel and representatives from sites throughout the complex to develop the methodology and implementation strategy to meet the expectations of Board Recommendation 2004-2. As a result, the following actions were determined to be necessary to adequately address the Board's concerns and achieving improvement in the safety posture of the DOE complex. Actions completed before the issuance of Revision 1 to this IP are noted for each deliverable.

Commitment 8.1 – Listing of New Facilities and Facilities Undergoing Major Modification

The site or field office will develop a listing of new category 2 and 3 defense nuclear facilities, including those undergoing major modification. Priority will be given to these facilities when completing the activities addressed by this implementation plan. The facility listing will be reviewed and approved by the site or field office. The appropriate CTA and PSO will review this listing and provide concurrence. The 2004-2 Core Team will provide oversight of this process.

Deliverable 8.1: *Listing of New Facilities and Facilities Undergoing Major Modification*

Lead Responsibility: DOE Heads of Field Organizations
Director, Office of Nuclear and Facility Safety Policy

Due Date: September 30, 2005 (Completed on September 30, 2005)

Commitment 8.2 – Recommendation 2004-2 Exclusion Reporting Process

The 2004-2 Core Team will develop the *Recommendation 2004-2 Exclusion Reporting Process* to be utilized for the initial screening of facilities subject to further review and analysis under this implementation plan. This process will be provided for review and comment from appropriate site, facility or technical experts, including the Board. The final process will be approved by the 2004-2 Core Team with the concurrence of the CTAs and PSOs as needed..

Deliverable 8.2: *Recommendation 2004-2 Exclusion Reporting Process*

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date: October 30, 2005 (Completed on October 31, 2005)

Commitment 8.3 – Recommendation 2004-2 Exclusion Report

Site or field offices complete the *Recommendation 2004-2 Exclusion Report* using the process developed in Commitment 8.2 and submit to the appropriate CTA and PSO for the hazard category 2 and 3 defense nuclear facilities that can be excluded from further review under the implementation plan. The CTA and PSO will review and concur with the facilities excluded from review under this implementation plan, with oversight provided by the 2004-2 Core Team. New facilities and facilities undergoing major modification cannot be excluded from further review based on only NB criteria.

Deliverable 8.3: Completed *Recommendation 2004-2 Exclusion Reports*

Lead Responsibility: DOE Heads of Field Organizations
Director, Office of Nuclear and Facility Safety Policy

Due Date: December 30, 2005 (Completed on December 29, 2005)

Commitment 8.4 – Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System

DOE site or field offices, with contractor participation, complete the *Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System.* The appropriate CTA and PSO will review and concur with the facilities listed, with oversight provided by the 2004-2 Core Team.

Deliverable 8.4: *Listing of Hazard Category 3 Defense Nuclear Facilities with an Active Confinement Ventilation System*

Lead Responsibility: DOE Heads of Field Organizations
Director, Office of Nuclear and Facility Safety Policy

Due Date: January 31, 2006 (Completed on March 7, 2006)

Commitment 8.5 – Safety Related Ventilation System Evaluation Guidance

The 2004-2 Core Team developed guidance for the sites to utilize when performing the *Safety Related Ventilation System Evaluation*. This applies to hazard category 2 defense nuclear facilities with a safety-class or safety-significant active confinement ventilation system, which were not excluded in the *Recommendation 2004-2 Exclusion Report*. This guidance was provided for review and comment from appropriate site, facility or technical experts, including the Board. The 2004-2 Core Team approved the final guidance with the concurrence of the CTAs and PSOs. Based on result of initial pilot evaluations and other ongoing reviews, the evaluation guidance will be used to develop any new or revisions to DOE directives or rule guidance documents to more formalize the guidance, including consideration of DOE policy on a "back-fit" process.

Deliverable 8.5.1 PF-4 Safety Related Ventilation System Evaluation Report

Lead Responsibility: Manager, Los Alamos Site Office

Due Date: December 21, 2006

The PF-4 system evaluation will be performed as a high-priority facility, but on an accelerated review schedule, as described in Commitment 8.6.

Deliverable 8.5.2: Assemble group of subject matter experts to develop appropriate performance and/or design expectations as input to guidance document.

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date: September 23, 2005 (Completed on September 20, 2005)

Deliverable 8.5.3: Hold DOE wide workshop to develop the final methodology and guidance to complete the safety related ventilation system evaluations.

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date: October 21, 2005 (Completed on October 18, 2005)

Deliverable 8.5.4: Develop initial *Safety Related Ventilation System Evaluation Guidance* document with input from CTAs, PSOs and Board.

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date: December 16, 2005 (Completed on February 2, 2006, *Ventilation System Evaluation Guidance for Safety-Related and Non-Safety-Related Systems*)

Deliverable 8.5.5: Develop new or revised draft evaluation guidance or guidance for DOE directives or rules and issue for DOE-wide review and comment based on experience and lessons learned from pilot evaluations (See also Deliverable 8.6.4).

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date: November 30, 2006

Commitment 8.6 – Safety Related Ventilation System Evaluation

Based on the initial workshop guidance and draft DOE directives or rule guidance, DOE site or field offices, with contractor participation, prepare the facility *Safety Related Ventilation System Evaluation* for hazard category 2 defense nuclear facilities with a safety-class or safety-significant confinement ventilation system, which were not excluded in the *Recommendation 2004-2 Exclusion Report.* The appropriate CTA and PSO will review and coordinate with the site manager on facility Confirmatory Report, with monitoring and support provided by the 2004-2 Core Team.

As a result of the development, review, and approval of the Ventilation System Evaluation Guidance document (Deliverables 8.5.4 and 8.7), a revision to Commitments 8.6 and 8.8 was necessary. The changes and additions reflect the system evaluation process described in the Ventilation System Evaluation Guidance. Specifically:

- The evaluation process will be piloted at several facilities prior to DOE-wide implementation. Lessons learned from these pilot evaluations can be incorporated into the Ventilation System Evaluation Guidance document prior to performing additional evaluations at other facilities. The remaining evaluations for high, medium and low priority facilities are phased after the lessons learned are incorporated into a revised Ventilation System Evaluation Guidance document.

- The evaluation of the PF-4 confinement ventilation system is a special priority. The PF-4 evaluation will proceed as a high priority facility with an accelerated schedule. The PF-4 evaluation will be initiated by the delivery of a proposed revision of the DSA by the LANL contractor and will be completed in advance of other high priority facilities.

- Revision 1 of this Implementation Plan added deliverables associated with the Independent Review Panel (IRP), a technical reviewing organization introduced in the Ventilation System Evaluation Guidance. It is intended that the IRP will provide consultation and support for system evaluations. The IRP will help ensure consistency of system evaluations and provide a means to share lessons learned to improve the efficacy of reviews. The IRP will interact with the CTA organizations to provide support for the evaluations.

- The Ventilation System Evaluation Guidance addresses both safety and non-safety related ventilation systems. Therefore, the deliverables under Commitment 8.8 of this implementation plan have been merged and incorporated into Commitment 8.6.

Deliverable 8.6.1: Listing of facilities that will complete a Ventilation System Evaluation

The listing will be categorized into five subgroups:

- Pilot Facilities
- High Priority Facility with an accelerated schedule (PF-4 at LANL)
- High Priority Facilities (New projects & some existing HC-2 facilities)
- Medium Priority Facilities (Primarily existing HC-2 facilities)
- Low Priority Facilities (Existing HC-3 facilities)

Lead Responsibility: DOE Heads of Field Organizations/PSOs

Due Date – July 14, 2006

Deliverable 8.6.2: Establish the Independent Review Panel (IRP) (described in the Ventilation System Evaluation Guidance document). The IRP will assist and consult with the site/facility evaluation teams, and review select facility evaluations.

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date – July 14, 2006

Deliverable 8.6.3: Site offices complete facility-specific evaluation reports and IRP complete reviews for selected facilities based on any revised Ventilation System Evaluation guidance. Site offices will engage both the IRP and the CTA early in the evaluation process to ensure that the Data Collection Tables (Ventilation System Evaluation Guidance document Table 4.3) properly specify applicable attributes (i.e., SC, SS, DID) for listed facilities based on the Documented Safety Analysis assumptions. This engagement and consultation is to assure consistent application and specification across DOE sites. Site visits, conference calls, and status reports are appropriate between site offices, IRP, and CTA organizations during the evaluation process. The final evaluation reports must identify gaps and recommend actions for DOE field management disposition and approval (with PSO approval of actions that require PSO funding or PSO coordination) under Deliverable 8.6.5. See Evaluation Process Flow Chart, Figure 3-1, in Ventilation System Evaluation Guidance.

Lead Responsibility: DOE Heads of Field Organizations

Due Date – Pilot Facilities: September 30, 2006

Due Date -- High Priority Facility with an Accelerated Schedule- December 21, 2006

Due Date – High Priority Facilities: 90 days after completion of any revision to the Ventilation System Evaluation Guidance document based on pilot reviews (See Deliverable 8.6.4), except for LANL facilities, which will be 90 days after the PF-4 completion.

Due Date – Medium Priority Facilities: 180 days after completion of any revision to the Ventilation System Evaluation Guidance document based on pilot reviews, except for LANL facilities, which will be 180 days after the PF-4 completion(See Deliverable 8.6.4)

Due Date – Low Priority Facilities: 270 days after completion of any revision to the Ventilation System Evaluation Guidance document based on pilot reviews, except for LANL facilities, which will be 270 days after the PF-4 completion. (See Deliverable 8.6.4)

Note: Sites with few or no low priority facilities are encouraged to complete their system evaluations as soon as reasonably achievable after completion of Deliverable 8.6.4and, for LANL facilities, consideration will be given to accelerating the high, medium, and low priorities facilities to proceed independently from the PF-4 schedule linkage, to the extent practical, and be performed coincident with the high, medium and low priority facilities at other sites.

Deliverable 8.6.4: Revise, as necessary, the Ventilation System Evaluation Guidance document based on experience and lessons learned from the pilot facility evaluations.

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date – October 31, 2006

Deliverable 8.6.5: PSO concurrence and approval on disposition of gaps and upgrades identified in evaluations after coordination with CTA, if necessary.

Lead Responsibility: Heads of PSO Organizations

Due Date – Pilot Facilities: January 15, 2007

Due Date – High Priority Facilities: 90 days after receiving facility-specific report

Due Date – Medium Priority Facilities: 90 days after receiving facility-specific report

Due Date – Low Priority Facilities: 90 days after receiving facility-specific report

Commitment 8.7 – Non Safety Related Ventilation System Evaluation Guidance

The 2004-2 Core Team developed the *Ventilation System Evaluation Guidance for Safety-Related and Non-Safety-Related Systems* for the sites to utilize when performing their *Non Safety Related Ventilation System Evaluation*. This system evaluation applies to hazard category 2 facilities without a safety-class or safety-significant confinement ventilation system and hazard category 3 facilities without a confinement ventilation system, neither of which were excluded from review by the *Recommendation 2004-2 Exclusion Report*, submitted in accordance with Commitment 8.3.

Deliverable 8.7: *Non Safety Related Ventilation System Evaluation Guidance*

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy, EH
Chief of Defense Nuclear Safety, NNSA
Chief Operations Officer, Environmental Management

Due Date: December 15, 2005 (Completed on February 2, 2006)

Commitment 8.8 – Non Safety Related Ventilation System Evaluation

Site and field offices, with contractor participation, complete the *Non Safety Related Ventilation System Evaluation* for the following facilities (except those excluded by the *Recommendation 2004-2 Exclusion Report*).

- Hazard category 2 defense nuclear facilities that do not have a safety-class or safety-significant confinement ventilation system that performs an active safety function.
- Hazard category 3 defense nuclear facilities that do not have an active confinement ventilation system.

The Ventilation System Evaluation Guidance document (Deliverables 8.5.4 and 8.7) provides information for completing both safety-related and non-safety related ventilation system evaluations. All Commitment 8.8 deliverables in the initial revision of this implementation plan are now included under Commitment 8.6.

Commitment 8.9 – Evaluation of Directives

Upon completion of the workshop and after reviewing (a) comments received from draft guidance documents (See Deliverable 8.5.5), and (b) facility specific evaluations, the 2004-2 Core Team will evaluate the need for improving directives and the implementation of existing requirements. As stated in the Board's recommendation, this assessment will consider the following, as a minimum:

- Providing more prescriptive safety directives for using a confinement ventilation system.
- Ensuring the 25 rem evaluation guideline is used solely for classification of safety controls.

Completion of this commitment will require a review of site office and contractor mechanisms or procedures for utilizing the 25 rem offsite dose evaluation guideline and application to approved safety bases. Actions will be taken by the site offices to correct

any deficiencies identified during this review process. The 2004-2 Core Team will consider the 25 rem report and other lessons learned from system evaluations in making a recommendation to revise DOE directives.

Deliverable 8.9.1: Report of results of reviewing site procedures and safety bases mechanisms for using 25 rem evaluation guideline after completion of the pilots and high priority facility-specific system evaluations under Deliverable 8.6.3.

Lead Responsibility: CTAs and PSOs

Due Date: March 31, 2007

Deliverable 8.9.2: Revised DOE directives/technical standards into RevCom

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date: 60 days after completion of all of the facility-specific system evaluations under Deliverable 8.6.3

9. Organizations and Management

The Office of Environment, Safety and Health (EH) is responsible for developing and proposing Departmental environment, safety and health policy, rules, and regulations and associated guidance, standards and technical interpretations in concert with programmatic and field element needs. The Assistant Secretary of EH is the Cognizant Secretarial Officer for this function and related actions under this Plan. Within EH, the Office of Nuclear and Facility Safety Policy is responsible for nuclear safety requirements, guidance, and standards associated with defense nuclear facility safety bases. The Responsible Manager for the execution of the Plan is the Director, Office of Nuclear and Facility Safety Policy. In this capacity, the Responsible Manager will ensure that associated actions, deliverables, and commitments are accomplished. The Responsible Manager will work with the appropriate DOE line organizations in implementing the objectives of this Implementation Plan.

10. Reporting

To ensure the various Department implementing elements and the Board remain informed of the status of plan implementation, the Department's policy is to provide progress reports to the Board and/or Board staff.

Commitment 10.1: The Department will provide briefings to the Board and/or Board Staff. These briefings will include updates on the status of completing actions identified in the various reviews and assessments indicated in this implementation plan.

Deliverable 10.1: Board and/or Board Staff Briefings

Deliverable 10.2 Recommendation 2004-2 Final Report

Lead Responsibility: Director, Office of Nuclear and Facility Safety Policy

Due Date: Briefings will be provided approximately every quarter. The final report will be issued at the completion of all actions relating to this recommendation implementation plan. The final report will summarize physical modifications and upgrades resulting from the completed system evaluations, including plans for funding and schedules for completion, and summarize lessons learned that are incorporated into revised directives if necessary.