



The Secretary of Energy
Washington, DC 20585
December 6, 1999

RECEIVED - 7 11 1999
DHS

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004

Dear Mr. Chairman:

Enclosed is the Department of Energy's report and action plan addressing issues raised in the May 1999 Technical Report 23 – *HEPA Filters Used in the Department of Energy's Hazardous Facilities*.

The Department acknowledges the concerns raised by the Board. This action plan fulfills our commitment to you to develop a plan that will ultimately ensure that adequate infrastructure is in place so that High-Efficiency Particulate Air (HEPA) filters are maintained and their performance assured. The Department believes that the action plan addresses the issues raised in Technical Report 23.

The Lead Program Secretarial Officers will proceed with an initiative, using the principles of Integrated Safety Management, to assess the potential safety vulnerability to workers, the public, and the environment due to degraded filters that are relied on to mitigate accidents. Corrective actions will be tracked and managed through the Department's corrective action tracking system. This initiative will be completed by May 31, 2000. Also by May 31, 2000, the Department will resolve issues concerning maintenance of the HEPA filter infrastructure, including filter test facility consolidation, interim operation of the Oak Ridge test facility, and the benefits of testing 100 percent of the filters prior to installation.

The Department will update technical guidance used by the field to safely operate the filters – the *Airborne Release Fractions/Rates Handbook* and the *Nuclear Air Cleaning Handbook* – by December 1, 2000, and November 30, 2001, respectively. By January 15, 2000, the Department will review options for



adequate information exchange and dialogue on ventilation filtration technology. The Department will document completion of these initiatives in a letter to the Board.

We appreciate the Board's advice and support in this important matter. If you have any questions, please contact me.

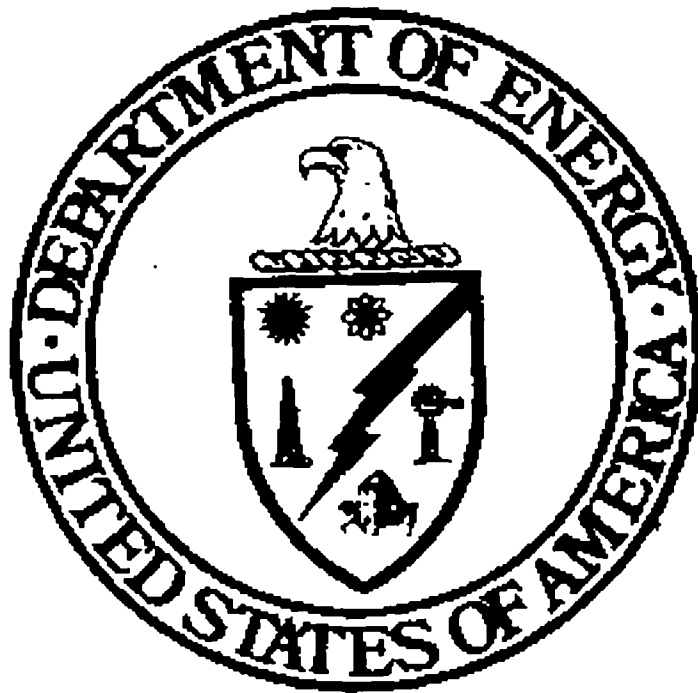
Yours sincerely,

A handwritten signature in cursive script, appearing to read "Bill Richardson", with a long horizontal flourish extending to the right.

Bill Richardson

**Department of Energy
HEPA Filter Program Infrastructure**

**A Report and Action Plan In Response to
Defense Nuclear Facilities Safety Board
Technical Report 23**



December 1999

Table of Contents

Executive Summary	2
1.0 Introduction	4
2.0 Assessments	6
3.0 Technical Issues	7
4.0 Management Issues	9
5.0 Information Exchange	11
Table 1 – Summary of Actions and Deliverables	12
Table 2 – Cross Walk Between Issues Identified in DNFSB Tech 23 and DOE’s Response in the HEPA Filter Program Infrastructure Report and Action Plan	14

Executive Summary

High-Efficiency Particulate Air (HEPA) filters are used extensively at Department of Energy (DOE) sites to remove small hazardous and radioactive particles from air flowing from a facility's interior to the outdoors and from being re-circulated within a facility. The filters are the accepted method to keep airborne emissions within safety standards in order to protect the public, workers, and the environment. In May 1999, the Defense Nuclear Facilities Safety Board (Board) released Technical Report 23 – *HEPA Filters Used in the Department of Energy's Hazardous Facilities* – that detailed shortcomings in programs to maintain the filters due to aging and degraded infrastructure and budget cuts. Identified problems include increased likelihood of filters failing which would allow dangerous emissions to escape, outdated written technical guidance, and maintaining the capability to test filters prior to installation in contaminated systems. Oak Ridge Operations Office estimates that the cost to test every filter prior to installation into nuclear containment ventilation systems across the DOE complex (2,500 - 4,000 filters per year) is \$300,000 per year.

In a June 8, 1999 letter to the Secretary of Energy, the Board requested a plan outlining the steps required to restore the infrastructure that supports the HEPA filter program. In response, the Department has developed a plan with six actions that address four issues:

- **Assessments.** The Board assigned the highest priority to assessing the potential vulnerability due to degraded filters that are relied upon to mitigate accidents in DOE facilities. The plan tasks the field offices under the cognizance of the Lead Program Secretarial Officers to conduct assessments of potential vulnerability, using the principles of Integrated Safety Management, of Category 1, 2, and 3 nuclear facilities that rely on HEPA filters for accident mitigation. Action 1 of the plan commits DOE to complete the assessments by April 28, 2000 and enter identified corrective actions into DOE's corrective action tracking system by May 31, 2000.
- **Technical Issues.** The technical issues relate to updating two handbooks that govern the use and testing of HEPA filters – the *Nuclear Air Cleaning Handbook* and the *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities Handbook*. Actions 2 and 3 of the plan commit DOE to revise and issue these handbooks through the Directives system by November 30, 2001 and December 1, 2000, respectively.
- **Management Issues.** The management issues concern maintaining the infrastructure of HEPA filter testing that provides proof of design and assure quality of filters that may be relied upon to provide a safety function. Management issues also concern consolidation of filter testing facilities, operation of the Oak Ridge testing facility until consolidation issues are resolved, and the benefit of testing 100% of filters prior to installation. Actions 4 and 5 of the plan commit DOE to resolve, by May 31, 2000 issues related to consolidated HEPA testing facilities, and the benefit of testing 100% of HEPA filters.

- **Information Exchange.** The Nuclear Air Cleaning Conference has historically provided a feedback forum for information exchange and peer review. Action 6 of this plan commits DOE, by December 30, 1999, to review and recommend options – via the Secretarial Safety Council – to assure adequate ventilation filtration information exchange (e.g., the Internet, or maintaining support for the *Nuclear Air Cleaning Conference*).

1.0 Introduction

High-Efficiency Particulate Air (HEPA) filters are used extensively at DOE sites to remove small hazardous and radioactive particles from air flowing from a facility's interior to the outdoors and from being re-circulated within a facility. The filters are the accepted method to keep airborne emissions within safety standards in order to protect the public, workers, and the environment.

In May 1999, the Defense Nuclear Facilities Safety Board (Board) released Technical Report 23 – *HEPA Filters Used in the Department of Energy's Hazardous Facilities* – that detailed shortcomings in programs to maintain the filters due to aging and degraded infrastructure and budget cuts. Identified problems include increased likelihood of filters failing which would allow dangerous emissions to escape, outdated written technical guidance, and maintaining the capability to test filters prior to installation in contaminated systems. Oak Ridge Operations Office estimates that the cost to test every filter prior to installation in nuclear containment ventilation systems across the DOE complex (2,500 - 4,000 filters per year) is \$300,000 per year.

In a June 8, 1999 letter to the Secretary of Energy, the Board requested a plan outlining the steps required to restore the infrastructure that supports the HEPA filter program. Specifically, four general issues need to be resolved:

- **Assessments.** The Board assigned the highest priority to assessing the potential vulnerability due to degraded filters that are relied upon to mitigate accidents in DOE facilities.
- **Technical Issues.** The technical issues relate to updating guidance governing the use and testing of HEPA filters in DOE facilities.
- **Management Issues.** The management issues concern maintaining the infrastructure of HEPA filter testing that provides proof of design and assure quality of filters that may be relied upon to provide a safety function. Management issues also concern consolidation of filter testing facilities, operation of the Oak Ridge testing facility until consolidation issues are resolved, and the benefit of testing 100% of filters.
- **Information Exchange.** The information exchange issue concerns maintaining support for the Nuclear Air Cleaning Conference as a forum for peer review and exchange of ideas, or other means (e.g., the Internet) to better assure adequate information exchange on ventilation filtration.

Sections 2.0, 3.0, 4.0, and 5.0 of this report describe the actions to be taken by the Department to resolve these issues in response to the Board's concerns.

1.1 Background

The Board first identified concerns about maintenance of ventilation systems including filters at plutonium processing facilities in a report (DNFSB/TECH-3) issued in 1995. In February 1996, the Department submitted a plan to the Board that identified 36 corrective actions. Approximately one-quarter of these actions presently remain open.

In April 1998, a report on vulnerabilities from ventilation filter degradation was submitted to the Board. In October 1998, a DOE report of problems associated with filter wetting and subsequent degradation was completed. In addition, there was a study of the effects of service applications on HEPA filter performance, including results of destructive and nondestructive filter testing at Rocky Flats in 1997, and a paper given at the 24th Nuclear Air Cleaning Conference in 1996 on lessons learned from three serious fires in plutonium facilities at Rocky Flats over three decades.

In 1996, the Office of Environmental Management (EM) completed a report that evaluated technical and programmatic issues related to HEPA filter quality (E. Brolin et al., 1996). The report had several conclusions and recommendations, two of which are pertinent to the commitments made in Section 4.0 of this report:

- The present DOE practice of 100% receipt inspection and efficiency and pressure drop testing of HEPA filters for nuclear applications should be continued and made mandatory in a DOE directive to be developed by the Office of Defense Programs (DP).
- Testing facilities should be consolidated at one location. The report recommended closure of the Oak Ridge (OR) Filter Test Facility (FTF) and consolidating it to either the Army's laboratory in Edgewood, MD or to a private-sector facility selected by competitive bidding.

The Brolin report was approved by EM with concurrences by DP, the Office of Environment, Safety and Health, and the Office of Field Management.

2.0 Assessments

The Board assigned the highest priority to assessing the potential vulnerability due to degraded filters. DOE field offices will conduct assessments of each nuclear facility that relies on HEPA filters for accident mitigation. The assessments will be limited to Category 1, 2, and 3 nuclear facilities, that may, because of special circumstances (e.g., material form and hazard type, or proximity to site boundary) depend on HEPA filters for protection of persons outside the facility. The status of identified corrective actions will be tracked in DOE's corrective action tracking system (CATS).

The assessments will focus on HEPA filters that perform a safety function in accident situations (including standby and bypass filter banks). Note that the assessments will not be limited only to those "credited" in a safety analysis report (SAR), but should include all that may perform an accident mitigation function. The assessments should be based on existing documentation (no new studies will be requested).

Assessments will be of the ability of potentially degraded HEPA filters (e.g., high radiation exposure, wetting, high temperature) to perform their safety function under accident conditions (e.g., fires, explosions) that stress the filters. The assessments will include information on how long the installed filters have been in service and any existing policies relating to change-out.

Action 1.0: DOE field offices to conduct assessments of vulnerability of each nuclear facility relying on HEPA filters for accident mitigation.

Responsible Managers: Lead Program Secretarial Officers (LPSOs)

Deliverables:

- 1.1 – Memorandum from the Deputy Secretary, coordinated by the Assistant Secretary for Environment, Safety and Health with LPSO concurrence, and reviewed by the Secretarial Safety Council (SSC), tasking field offices to conduct assessments of each facility under their cognizance that rely on HEPA filters for accident mitigation. The memo will include guidance on filter applications/conditions that may represent a vulnerability and suggestions regarding performance assessment. **Due date:** February 1, 2000.
- 1.2 – Results of the assessments to be forwarded to the Deputy Secretary and the SSC through the Office of Environment, Safety and Health. **Due date:** April 28, 2000.
- 1.3 – Identified corrective actions resulting from the assessments entered in DOE's corrective action tracking system (CATS). **Due date:** May 31, 2000.

3.0 Technical Issues

Technical issues relate to updating guidance governing use and testing of HEPA filters in DOE facilities, principally the *Nuclear Air Cleaning Handbook* and *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities Handbook* (DOE-HDBK-3010-94). Commitments discussed in the following sections will be supported by a technical basis.

3.1 Nuclear Air Cleaning Handbook

The Nuclear Air Cleaning Handbook was issued by the Energy Research and Development Administration (ERDA) in 1976. It is more than 20 years old and in need of an update to address current technology. Material that needs updating includes:

- technological developments in equipment (e.g., manifold systems, bag-in-bag-out filter housings, and fluid seal filters),
- technological developments in testing methods (e.g., laser efficiency and in-place leak testing),
- construction, and
- codes and standards that have been revised or developed since the 1976 ERDA handbook was released.

The Department has not been successful in issuing a draft revision to the handbook. In developing this plan, three options for revising the handbook were considered:

- Resolve comments and issue the existing draft revision of the handbook. The existing draft revision reformats the handbook into more of a “textbook” style that may not be suitable for easy use as a nuclear air cleaning and HEPA filter reference.
- Update and issue the handbook as a series of monographs that address air cleaning topics.
- Update the handbook using the same format.

An informal HEPA filter topical committee was convened in July 1999 to evaluate the three options. The committee concluded that the format of the existing Nuclear Air Cleaning Handbook (Option 3) would be the most effective format to be used in the field as a reference manual. The Department will develop a new revision to the Nuclear Air Cleaning Handbook. The revision will update topical information in the published handbook and address significant new issues that were not addressed in the original document. The revision will provide guidance to be used on a site-by-site basis for maximum HEPA filter service life based on hazard and operational factors. Once complete, the draft will be reviewed by the Field Management Council prior to placing it into the Directives system for use as a DOE standard.

Action 2.0: DOE will revise the *Nuclear Air Cleaning Handbook*.

Responsible Manager: Assistant Secretary for Defense Programs

- Deliverables:**
- 2.1 – Letter to the Board announcing placement of the draft handbook into the Directives system for DOE-wide review. **Due date:** December 1, 2000.
 - 2.2 – Issuance of revision of the *Nuclear Air Cleaning Handbook*. **Due date:** November 30, 2001.

Responsible Managers: Lead Program Secretarial Officers

- Deliverables:**
- 2.3 – Issuance of a letter to field managers describing handbook changes and the need to screen authorization basis documents for possible unreviewed safety questions (USQs), including filter service life. Corrective actions to be entered into CATS. **Due date:** November 30, 2001.

3.2 DOE-HDBK-3010-94

In its technical report, the Board noted that DOE-HDBK-3010-94 provides confusing guidance regarding HEPA filter performance. Specifically, Section 5.4 of DOE-HDBK-3010-94 provides confusing information regarding the response of a HEPA filter under thermal stress. This section will be revised to eliminate inconsistent guidance. The revision will be reviewed by the Field Management Council prior to issuance through the Directives system.

Action 3.0: DOE-HDBK-3010-94 *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities* revised to eliminate inconsistent HEPA filter performance guidance.

Responsible Manager: Assistant Secretary for Defense Programs

- Deliverables:**
- 3.1 – Letter to the Board announcing placement of the revised sections of DOE-HDBK-3010-94 into the Directives system for DOE-wide review. **Due date:** April 14, 2000.
 - 3.2 – Issuance of the revised sections of DOE-HDBK-3010-94. **Due date:** September 1, 2000.

Responsible Managers: Lead Program Secretarial Officers

- Deliverables:**
- 3.3 – Issuance of a letter to field managers describing handbook changes and the need to screen authorization basis documents for possible unreviewed safety questions (USQs). Corrective actions to be entered into CATS. **Due date:** November 30, 2001.

4.0 Management Issues

Management issues concern the HEPA filter quality assurance infrastructure, including filter test facility consolidation, continued operation of the Oak Ridge test facility until a revised testing strategy is in place, and the benefit of testing 100% of filters prior to installation.

In a memorandum dated April 21, 1999, the Secretary established the Field Management Council (FMC) charged with integration of corporate programs and support activities with line programs. The FMC reviews policy and guidance which have a significant impact upon the field, and makes recommendations to the Deputy Secretary, who chairs the FMC.

A DOE working group consisting of representatives from the Lead Program Secretarial Offices and the Office of Environment, Safety and Health (EH), and chaired by the Office of Environmental Management (EM), will perform the necessary analysis of the HEPA filter program infrastructure and make three recommendations to the FMC concerning: (1) filter test facility consolidation; (2) continued operation of the Oak Ridge test facility; and (3) the benefit of testing 100% of filters prior to installation.

4.1 Consolidation of the Filter Test Facility and Qualified Products List Laboratory

HEPA filters used in the Department's hazardous facilities are produced with a high degree of quality and uniformity through the application of stringent specifications. The *Nuclear Air Cleaning Handbook* and DOE-STD-3020 provide design, performance, and testing specifications for HEPA filters. These specifications are used for filter applications in both commercial and DOE nuclear facilities. The initial design performance is proven through destructive testing at a qualified products list (QPL) laboratory. Once filter design has been proven at a QPL laboratory, continued assurance of filter production is provided by nondestructive testing of each filter's ability to meet specified particle removal efficiencies, pressure drop, and conformance to design specifications. The testing is performed at an independent filter test facility (FTF).

Filter manufacturers pay the cost of "proof of design" destructive filter testing at a QPL laboratory. The Army's Edgewood facility currently performs this testing. Currently, DOE operates only one FTF, located at Oak Ridge. Observed filter failure rate is approximately five percent.

In 1996, Environmental Management completed a report which evaluated technical and programmatic issues related to HEPA filter quality (E. Brolin et al., 1996). With respect to maintaining test facilities capable of assuring filter quality, the report concluded that the QPL laboratory and FTF should be consolidated at one location. The report recommended closure of the Oak Ridge test facility and consolidating it to either the Army's laboratory in Edgewood, MD, another DOE facility, or to a private-sector facility selected by competitive bidding.

Continued quality assurance testing is an essential component of the infrastructure supporting DOE's HEPA filter program. Using current information, previous HEPA filter studies will be re-evaluated to recommend a course of action that either consolidates these facilities in one location,

or puts in place measures that ensure both facilities remain operable to support DOE's needs.

These recommendations will be considered by the Field Management Council as part of the process of resolving issues concerning consolidation of filter testing facilities that best suits the Department's future needs. Operation of the FTF at Oak Ridge will be maintained until a consolidated facility is established.

Action 4.0: Field Management Council review of consolidation of the QPL laboratory and FTF operation, and continued operation of the Oak Ridge test facility until a revised filter testing strategy is in place.

Responsible Manager: Assistant Secretary for Environmental Management

Deliverables: 4.1 – Letter to the Board describing the decision and the path forward for the QPL laboratory and FTF operation.

Due date: May 31, 2000.

4.2 – Maintain operation and funding of the FTF at Oak Ridge, and maintain contact with the Army's Edgewood QPL facility to remain apprised of plans for its continued operation until a revised strategy is established and implemented.

4.2 Benefit of Testing 100% of DOE's HEPA Filters

The benefit associated with testing 100% of the filters prior to installation on a complex-wide basis must be determined.

Action 5.0: Field Management Council review of the benefit of 100% testing of HEPA filters, including options other than 100% testing.

Responsible Manager: Assistant Secretary for Environmental Management

Deliverable: 5.1 – Letter to the Board describing decision and path forward for testing of HEPA filters. **Due date:** May 31, 2000.

5.0 Information Exchange

The information exchange issue concerns assuring adequate dialogue on ventilation filtration technology. The *Nuclear Air Cleaning Conference* has historically provided a forum for feedback from peer review and free exchange of ideas. EH will lead a review and recommend options – via the Secretarial Safety Council (SSC) – to assure adequate information exchange on the subject of ventilation filtration. The SSC, a subcommittee of the FMC, reviews policy and guidance that have a significant impact upon the field, and makes recommendations to the Deputy Secretary, who chairs the SSC. For information exchange, the options include maintaining support for the conference, or other appropriate means (such as the Internet).

Action 6.0: Review and recommend options – via the Secretarial Safety Council – to assure adequate ventilation filtration information exchange (e.g., the Internet, or maintaining support for the *Nuclear Air Cleaning Conference*).

Responsible Manager: Assistant Secretary for Environment, Safety and Health

Deliverable: Letter to the Board describing decision and path forward of means to better assure adequate information exchange on the subject of ventilation filtration. **Due date:** 1/15/00.

Table 1 – Summary of Actions and Deliverables

Action	Responsible Manager	Deliverables	Due Date
<p>1.0 – DOE field offices to conduct assessments of the vulnerability of each nuclear facility relying on HEPA filters for accident mitigation.</p>	<p>Lead Program Secretarial Officers (LPSOs)</p>	<p>1.1 – Memorandum from the Deputy Secretary, coordinated by the Assistant Secretary for Environment, Safety and Health with LPSO concurrence, and reviewed by the SSC, tasking field offices to conduct assessments of each facility under their cognizance that rely on HEPA filters for accident mitigation. Memo will include guidance on filter applications/conditions that may represent a vulnerability and suggestions regarding performance assessment.</p>	<p>2/01/00</p>
		<p>1.2 – Results of the assessments forwarded to the Deputy Secretary and the SSC through the Office of Environment, Safety and Health.</p>	<p>4/28/00</p>
		<p>1.3 – Identified corrective actions resulting from the assessments entered into the DOE corrective action tracking system (CATS).</p>	<p>5/31/00</p>
<p>2.0 – DOE will revise the <i>Nuclear Air Cleaning Handbook</i>.</p>	<p>Assistant Secretary for Defense Programs</p>	<p>2.1 – Letter to the Board announcing placement of the draft handbook into the Directives system for DOE-wide review.</p>	<p>12/01/00</p>
	<p>LPSOs</p>	<p>2.2 – Issuance of revision to the <i>Nuclear Air Cleaning Handbook</i>.</p>	<p>11/30/01</p>
		<p>2.3 – Issuance of a letter to field managers describing handbook changes and the need to screen authorization basis documents for possible unreviewed safety questions (USQs), including filter service life. Corrective actions to be entered into CATS.</p>	<p>11/30/01</p>
<p>3.0 – DOE-HDBK-3010-94 <i>Airborne Release Fractions/Rates & Respirable Fractions for Nonreactor Nuclear Facilities</i> revised to eliminate inconsistent HEPA filter performance guidance.</p>	<p>Assistant Secretary for Defense Programs</p>	<p>3.1 – Letter to the Board announcing placement of the revised sections of DOE-HDBK-3010-94 into the Directives system for DOE-wide review.</p>	<p>4/28/00</p>
	<p>LPSOs</p>	<p>3.2 – Issuance of the revised sections of DOE-HDBK-3010-94.</p>	<p>12/1/00</p>
		<p>3.3 – Issuance of a letter to field managers describing handbook changes and the need to screen authorization basis documents for possible unreviewed safety questions (USQs). Corrective actions to be entered into CATS.</p>	<p>12/1/00</p>

Table 1 – Summary of Actions and Deliverables

Action	Responsible Manager	Deliverables	Due Date
<p>4.0 – Field Management Council review of consolidation of the QPL laboratory and FTF operation, and continued operation of the Oak Ridge test facility until a revised filter testing strategy is in place.</p>	<p>Assistant Secretary for Environmental Management</p>	<p>4.1 – Letter to the Board describing decision and path forward for QPL laboratory and FTF operation.</p>	<p>5/31/00</p>
		<p>4.2 – Maintain operation and funding of the FTF at Oak Ridge, and maintain contact with the Army’s Edgewood QPL facility to remain apprised of plans for its continued operation until a revised strategy is established and implemented.</p>	<p>N/A</p>
<p>5.0 – Field Management Council review of the benefits of 100% testing of HEPA filters prior to installation, including options other than 100% testing.</p>	<p>Assistant Secretary for Environmental Management</p>	<p>5.1 – Letter to the Board describing the decision and path forward for testing of HEPA filters.</p>	<p>5/31/00</p>
<p>6.0 – Review and recommend options – via the Secretarial Safety Council – to assure adequate ventilation filtration information exchange (e.g., the Internet, or maintaining support for the <i>Nuclear Air Cleaning Conference</i>).</p>	<p>Assistant Secretary for Environment, Safety & Health</p>	<p>6.1 – Letter to the Board describing decision and path forward of means to better assure adequate information exchange on the subject of of ventilation filtration.</p>	<p>1/15/00</p>

**Table 2 – Cross Walk Between Issues Identified in DNFSB Tech 23
and DOE’s Response in the HEPA Filter Program Infrastructure Report and Action Plan**

DNFSB Tech 23			DOE Response	
Issue	Page	Description of Issue	Page	Description of Response
1	3-1	After nearly 50 years of continuing support for the Nuclear Air Cleaning Conferences, DOE has decided to withdraw support for future conferences, seriously compromising opportunities for feedback from peer review and a free exchange of ideas. Reconsideration of this decision is warranted in order to restore vigor to this important safety-related research area and to provide better assurance of adequate information exchange on the subject of ventilation filtration.	10, 11	Action 6.0 commits the Assistant Secretary for Environment, Safety and Health, by 1/15/00, to review and recommend options – via the Secretarial Safety Council – to assure adequate ventilation filtration information exchange (e.g., the Internet, or maintaining support for the <i>Nuclear Air Cleaning Conference</i>).
2	3-1	The Qualified Products List (QPL) laboratory committed to by senior DOE management is not in place.	8, 9, 10	Action 4.0 commits a working group under the direction of the Assistant Secretary for Environmental Management to perform the necessary analysis and make recommendations to the Field Management Council concerning consolidation of the QPL laboratory and the FTF. Action 4.1 commits DOE, by 5/31/00, to provide a letter to the Board describing the decision and path forward for the QPL laboratory and FTF operation.
3	3-1	The existence of the last remaining Filter Test Facility (FTF) is tenuous.	9	Action 4.2 commits DOE to maintain operation and funding of the FTF at Oak Ridge, and maintain contact with the Army’s Edgewood QPL facility until a revised strategy is established and implemented.
4	3-1	An updated <i>Nuclear Air Cleaning Handbook</i> , a draft revision of which was originally committed to by December 1996, is not yet available.	6, 7, 10	Action 2.0 commits DOE, by 12/01/00, to place the draft handbook into the Directives system for DOE-wide review, and issue the final <i>Nuclear Air Cleaning Handbook</i> by 11/30/01.
5	3-1	There is a serious need to update DOE-HDBK-3010-94 to correct errors that could lead to non-conservative analysis.	7, 10	Action 3.0 commits the Assistant Secretary for Defense Programs to revise DOE-HDBK-3010-94 to eliminate inconsistent guidance regarding HEPA filter performance. By 4/28/00, the revised sections will be placed into the Directives system for DOE-wide review. By 12/1/00, the revised sections will be issued.

**Table 2 – Cross Walk Between Issues Identified in DNFSB Tech 23
and DOE’s Response in the HEPA Filter Program Infrastructure Report and Action Plan**

DNFSB Tech 23			DOE Response	
Issue	Page	Description of Issue	Page	Description of Response
6	3-1	Designate a location and firmly commit to provide funding, personnel, and physical resources, and continued programmatic support for a replacement for the QPL laboratory, on an expedited schedule.	See above.	Refer to DOE response under Issue 2 above.
7	3-1	Ensure continued operation of the Oak Ridge FTF.	See above.	Refer to DOE response under Issues 2 and 3 above.
8	3-2	Identify needed resources and assign responsibility for early publication of a revised <i>Nuclear Air Cleaning Handbook</i> , in order to make accurate, up-to-date guidance available.	See above.	Refer to DOE response under Issue 4 above.
9	3-2	Revise, update, and implement DOE-HDBK-3010-94 to eliminate confusing guidance regarding the performance characteristics of installed HEPA filters, and to improve the quality and reliability of assumptions supporting safety analyses involving these critical components of confinement systems protecting workers, the public, and the environment.	See above.	Refer to DOE response under Issue 5 above.
10	3-2	Establish a conservative maximum age limit for HEPA filters involved in safety-related service. Such a limit should be established, simply because the filters degrade with time, and only 1–15 years of meaningful data is available to justify extended service life. Any age limit established should be supported by a systematic evaluation of how the strength of HEPA filters varies over time, for both installed filters and those in storage.	6	The revision of the Nuclear Air Cleaning Handbook under Action 2.0 will provide guidance to be used on a site-by-site basis for maximum HEPA filter service life based on hazard and operational factors.