Description of document:	Written responses and/or letters from the Defense Nuclear Facilities Safety Board (DNFSB) to a Congressional Committee or Congressional Committee Chair, 2012-2013
Requested date:	22-April-2013
Released date:	15-May-2013
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Source of document:	Information/FOIA Officer Defense Nuclear Facilities Safety Board 625 Indiana Avenue NW, Suite 700 Washington, DC 20004 Email: FOIA@dnfsb.gov (ATTN: Information Officer/FOIA Request)

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

May 15, 2013

This letter responds to your electronic Freedom of Information Act request dated, and received in this office on April 22, 2013.

Information responsive to your request is enclosed.

There are no fees associated with this request. If you have any questions, please do not hesitate to call me at (202) 694-7088.

Sincerely,

Andrew Thibadeau
FOIA Officer

Enclosures:
1) Letter to Senator Cochran dated 03/20/12
2) Letter to Congressman Dicks dated 03/20/12
3) Letter to Congressman Rogers dated 03/20/12
4) Letter to Senator Inouye dated 03/20/12
5) Letter to Senator Nelson dated 5/10/12
6) Letter to Senators Feinstein and Alexander dated 07/03/12
7) Letter to Congressmen Frelinghuysen and Visclosky dated 08/10/12
8) Letter to Senators Feinstein and Alexander dated 08/10/12
9) Letter to Senators Inouye and Cochran dated 08/10/12

Enclosures (continued):

10) Letter to Congressmen Rogers and Dicks
    dated 08/10/12
11) Letter to Congressman Turner dated 01/25/13
12) Letter to Congressman McKeon and Smith
    dated 02/14/13
13) Letter to Senators Levin and Inhofe dated 02/14/13
14) Letter to Senator Wyden dated 04/01/13

ENCLOSURES

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

March 20, 2012

The Honorable Thad Cochran
Vice Chairman
Committee on Appropriations
United States Senate
2402 Capitol Building
Washington, DC 20510

Dear Senator Cochran:

I am writing to you with an update regarding the implementation of the provision in the Fiscal Year 2012 appropriation for the Defense Nuclear Facilities Board (in Public Law 112-74) which provided that:

> within 90 days of enactment of this Act, the Defense Nuclear Facilities Safety Board shall enter into an agreement for inspector general services with the Office of Inspector General for the Nuclear Regulatory Commission for fiscal years 2012 and 2013: *Provided further,* That at the expiration of such agreement, the Defense Nuclear Facilities Safety Board shall procure inspector general services annually thereafter.

To date, efforts by the Board and Inspector General of the Nuclear Regulatory Commission have not been successful in finalizing a services agreement. In these ongoing discussions, the Board and the Inspector General have not reached an agreement as to the appropriate level and scope of inspector general services commensurate with the Board's operation and size. The Board is working with the Inspector General to reach an agreement by June 30, 2012.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

March 20, 2012

The Honorable Norman D. Dicks
Ranking Minority Member
Committee on Appropriations
United States House of Representatives
H-307 Capitol Building
Washington, DC 20515-6015

Dear Congressman Dicks:

I am writing to you with an update regarding the implementation of the provision in the Fiscal Year 2012 appropriation for the Defense Nuclear Facilities Board (in Public Law 112-74) which provided that:

> within 90 days of enactment of this Act, the Defense Nuclear Facilities Safety Board shall enter into an agreement for inspector general services with the Office of Inspector General for the Nuclear Regulatory Commission for fiscal years 2012 and 2013: *Provided further*, That at the expiration of such agreement, the Defense Nuclear Facilities Safety Board shall procure inspector general services annually thereafter.

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Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

March 20, 2012

The Honorable Harold Rogers
Chairman
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

I am writing to you with an update regarding the implementation of the provision in the Fiscal Year 2012 appropriation for the Defense Nuclear Facilities Board (in Public Law 112-74) which provided that:

> within 90 days of enactment of this Act, the Defense Nuclear Facilities Safety Board shall enter into an agreement for inspector general services with the Office of Inspector General for the Nuclear Regulatory Commission for fiscal years 2012 and 2013: *Provided further,* That at the expiration of such agreement, the Defense Nuclear Facilities Safety Board shall procure inspector general services annually thereafter.

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Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

March 20, 2012

The Honorable Daniel K. Inouye
Chairman
Committee on Appropriations
United States Senate
Washington, DC 20515

Dear Mr. Chairman:

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Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
Washington, DC 20004-2901

May 10, 2012

Senator Ben Nelson
Chairman
Subcommittee on Strategic Forces
Committee on Armed Services
United States Senate
720 Hart Senate Office Building
Washington, DC 20510

Dear Senator Nelson:

The Defense Nuclear Facilities Safety Board (Board) welcomes the opportunity to offer its views on legislation proposed by the House Armed Services Committee in the National Defense Authorization Act for Fiscal Year 2013. The committee's proposed changes to the Atomic Energy Act of 1954, as amended, and to the National Nuclear Security Administration (NNSA) Act would substantially alter the Board's enabling legislation and its safety oversight of defense nuclear facilities. Consequently, NNSA's and the Department of Energy's (DOE) national security mission would be jeopardized. The proposed changes, if enacted, would amount to Congress concluding that NNSA does not need independent oversight. The legislation would all but erase the Board's independence and authority with respect to safety oversight of NNSA defense nuclear facilities and activities. In addition, changes to the Atomic Energy Act would lower the standard used to ensure adequate protection of public safety. The proposed legislation endorses a strong shift towards contractor self-regulation, which is not justified based on the present maturity of contractor assurance systems and, even more importantly, neuters the inherent responsibility of the government to ensure public and worker safety.

The purpose of this letter is to point out the ramifications of the proposed changes and suggest that further thought be given to the legislation before moving ahead. The discussion that follows will be divided into two sections: Atomic Energy Act changes that directly affect the Board, and NNSA Act changes that indirectly affect the Board's oversight function.

ATOMIC ENERGY ACT CHANGES

Bill Sections 3115, 3202
42 U.S.C. § 2286a

Description of Changes: These sections of the bill alter the statutory standard serving as the basis for Board actions from "ensure adequate protection of public health and safety" to "ensure that risks to public health and safety are as low as reasonably practicable and public health and safety are adequately protected." As amended, subsection 2286a(b)(5) would mandate that in formulating its recommendations, the Board "shall consider and specifically assess the technical

and economic feasibility, the costs and benefits, and the practicability of implementing the recommended measures."

Observations: The "adequate protection" standard is drawn from the Atomic Energy Act of 1954, as interpreted in regulations issued by the Atomic Energy Commission beginning in the mid-1950s, by the Nuclear Regulatory Commission (NRC) beginning in 1975, and most recently by DOE in rules issued from 1995 to 2001. The standard has also been reviewed in the federal courts, the seminal case being the Supreme Court decision in *Power Reactor Development Co. v. Int'l Union of Elec., Radio and Mach. Workers*, 367 U.S. 396 (1961). DOE applies the adequate protection standard to all its nuclear facilities, both defense and civilian. See *Department of Energy Nuclear Safety Policy*, DOE P 420.1 (2011), and 10 CFR Part 830, *Nuclear Safety Management*.

The standard "as low as reasonably practicable" (usually termed "ALARP") is a safety concept used predominantly in the United Kingdom and certain other European nations. It must be assumed that U.K. practices and interpretations are intended for its application. Preliminary research discloses that while this standard is often tied to the use of cost-benefit analysis, the weighing of costs against benefits is done using a "grossly disproportionate" standard. That is, when a safety upgrade is being considered and its costs assessed, it must be implemented unless the costs would be "grossly disproportionate" to the safety benefits. See *Edwards v. National Coal Board*, 1 All ER 743 (1949).

Two major legal issues are created by the simple addition of the ALARP standard to the adequate protection standard without any attempt to reconcile the two. First, the combination of the two standards would be extremely difficult to interpret. ALARP is an approach that drives the addition of safety measures until a gross disproportion between cost and benefit is reached, while adequate protection is a single safety threshold defined in DOE and NRC regulations and guidance documents. Second, ALARP by itself has no interpretive history in the United States, nor has guidance been issued by either DOE or NRC on this approach. The legislative history of the Board's enabling act contains considerable guidance from Congress on the intended interpretation of "adequate protection." See, e.g., Senate Armed Services Committee Report on S. 1085, *Nuclear Protections and Safety Act of 1987*, S. Rep. No. 232, 100th Cong., 1st Sess. pp. 5-8 (1987). Similar Congressional guidance would be needed for this new two-part standard to be useful.

A third legal issue is created by the conditioning of Board recommendations on cost-benefit analysis. This provision would seem to run afoul of judicial decisions holding that a decision on whether adequate protection exists under the Atomic Energy Act cannot be tied to potential costs of safety improvements needed to meet the standard. See *Union of Concerned Scientists v. U.S. Nuclear Regulatory Commission*, 824 F.2d 108 (D.C. Cir. 1987), *reh'g en banc denied*, 859 F.2d 237; and *Union of Concerned Scientists v. U.S. Nuclear Regulatory Commission*, 880 F.2d 552 (D.C. Cir. 1989). Adequate protection, according to these decisions, must be decided without regard to costs; costs of upgrades *beyond* adequate protection may be weighed against benefits. See NRC's backfitting rule, 10 CFR § 50.109 (upheld in the second of the two cited cases).

From the practical standpoint, it is almost impossible for the Board to conduct cost-benefit analyses of DOE's programs and activities. To do so would require that the Board have full access to DOE's financial system and the finances and budgets of DOE's contractors. The Board would have to engage employees or contractors trained in economic analysis of regulatory actions, thus immediately adding cost to the Board's oversight. DOE would have to expend additional funds to review the Board's analyses, resulting in a great deal of federal funds being expended for no safety benefit whatsoever. The statute's current provisions provide more than adequately for the Secretary of Energy (Secretary) to weigh the costs of implementing the Board's recommendations.

A further complication arises from the fact that to conduct cost-benefit analyses, the Board would have to determine the solution or range of solutions that DOE would implement in response to the issues identified by the Board in its recommendations. The selection of the solution normally falls under the authority of the Secretary. This authority would have to be transferred from DOE/NNSA to the Board in order to allow for effective cost-benefit analyses.

Finally, the Board is required under its existing statute to consider the technical and economic feasibility of implementing its recommendations. The Secretary may "accept" a Board recommendation but make a determination that its implementation is impracticable because of budgetary considerations or because implementation would affect the Secretary's ability to meet the annual nuclear weapons stockpile requirements. The Secretary must report any such decision to the President and Congress. The Secretary has never made a determination that a Board recommendation cannot be implemented because of budget impracticability. This is strong evidence that the Board has executed its statutory duties in a faithful and responsible manner.

Bill Section 3202
42 U.S.C. § 2286d

Description of Changes: A new subsection (a) is added to the section on the process to be followed for Board recommendations:

> (a) Drafts and Submission of Recommendations.—
> (1) Subject to subsections (f) and (g), the Board shall submit to the Secretary of Energy a draft of any recommendations under section 312 and any related findings, supporting data, and analyses before the date on which such recommendations are finalized.
>
> (2) The Secretary may provide to the Board comments on the recommendations not later than 45 days after the date on which the Secretary receives the draft submission of the Board under paragraph (1). The Board may grant, upon request by the Secretary, not more than an additional 30 days for the Secretary to submit comments to the Board.

Observations: Providing the Secretary an opportunity to influence the content of a recommendation prior to its issuance, in a manner invisible to the public, runs directly contrary to the notion of independence stressed in the legislative history of the Board's statute. The words "independent establishment" in the organic act express the will of Congress that the Board and

DOE maintain an arms-length relationship and that the Board keep *the public* informed of its activities. In 1991, the General Accounting Office recommended that

> . . . the Chairman of the Defense Nuclear Facilities Safety Board direct that operating procedures be expeditiously established to ensure that all Safety Board activities are conducted in a manner that is clearly independent from DOE. These procedures should include criteria for determining when safety and health concerns related to DOE'S defense nuclear facilities will result in the Safety Board's issuing formal recommendations to the Secretary of Energy. In developing such criteria, the Safety Board should recognize the importance of allowing the public to be aware of the Board's activities and of significant safety and health issues at DOE's defense nuclear facilities. *Nuclear Safety: The Defense Nuclear Facilities Safety Board's First Year of Operation*, GAO/RCED-91-54, February 5, 1991.

The proposed provision would erode public confidence in the Board's objectivity by giving the impression that each published Board recommendation has been altered in response to off-the-record Secretarial comments. The statute as written gives the Secretary a full and fair opportunity to respond to the Board on the public record. Moreover, the Secretary is free in every case to accept, reject, or partially accept a Board recommendation. Before a step of this magnitude is taken, public comment should be sought and testimony taken in hearings from a wide range of experts and interested parties.

Bill Section 3202
42 U.S.C. § 2286(c)(5)

Description of Changes: A new subsection addresses the Board's structure and operating procedures. It reads in full:

> §2286(c)(5) Each member of the Board, including the Chairman and Vice Chairman, shall—
>
> (A) have equal responsibility and authority in establishing decisions and determining actions of the Board regarding recommendations, budgets, senior staff, hearings and witnesses, investigations, subpoenas, and setting policies and regulations governing operations of the Board;
>
> (B) have full, simultaneous access to all information relating to the performance of the Board's functions, powers and mission; and
>
> (C) have one vote.

Observations:

(5)(A): This is current practice, subject to the specified powers of the Chairman as chief executive officer in subsection 2286(c)(2). The Board's operating model is based on other collegial agencies, vesting some executive powers in the Chairman but reserving major legal and

policy matters to the entire Board. This model works well for the Board and is not in need of change.

(5)(B): All Board members have equal access to information. As a practical matter, imposing a requirement that all Board members have full, simultaneous access to all information relating to the performance of the Board's functions, powers and mission is impossible to fulfill in any functioning organization. The simultaneity requirement would cause a de facto shutdown of the Board by such a mundane event as a Board member taking a vacation or going on a business trip.

(5)(C): The Board's practice since 1990 has been to achieve consensus among the members before action is taken. Since the Board's inception nearly 23 years ago, every Board letter and recommendation has been voted upon and approved by every Board Member eligible to participate in the matter. Those familiar with the scientific discipline will readily understand that this involves considerable respect and camaraderie amongst the Board Members to enable them to unravel complex technical issues and forcefully act on safety concerns.

Bill Section 3202
42 U.S.C. § 2286b(b)(3)

Description of Changes: This new subsection would authorize the Board to use appropriated funds so that each Board member could appoint and employ one or more personal technical assistants.

Observations: Board members are required by law to be "respected experts in the field of nuclear safety with a demonstrated competence and knowledge relevant to the independent investigative and oversight functions of the Board." There should be no need for a respected expert to employ a personal advisor. Moreover, the Board has devoted much time and effort to develop a technical staff second to none in scientific and engineering expertise and carefully balanced to ensure that all required areas of expertise and specialty are adequately represented. Technical staff members are available to Board members at all times for consultation on any topic. Devoting precious FTEs for personalized technical assistance to Board members is a wasteful expenditure of appropriated funds and would not further the Board's mission. Furthermore, it would create multiple staff-to-staff interfaces where they currently do not exist.

NNSA ACT CHANGES

Bill Section 3133
50 U.S.C. §§ 2402(b), 2409

Description of Changes: These changes greatly increase the autonomy of NNSA by reducing the powers of the Secretary to direct NNSA policy or to oversee the activities of NNSA contractors.

Observations: Because the Board's statute is directed only at "the Secretary of Energy," the Board's oversight power with respect to NNSA's facilities would be much reduced. The Board's enabling act defines "defense nuclear facilities" as production, utilization, and certain nuclear waste storage facilities *under the control or jurisdiction of the Secretary of Energy*. Unless this

element is met, the Board's jurisdiction, authority, powers, or duties are not triggered. The Secretary would be unable to commit to an implementation plan, for example, without getting the explicit consent of the Administrator. Unless the Board's statute is amended to explicitly include NNSA, the Board would be unable to provide effective safety oversight of NNSA's defense nuclear activities.

Bill Section 3113
50 U.S.C. §§ 2461

Description of Changes: These amendments require (1) that henceforth all oversight of NNSA contractors *by any federal agency* be conducted based on outcomes and performance-based standards rather than detailed, transaction-based oversight in a manner to be prescribed by new NNSA policies and regulations; and (2) that NNSA adopt the new "as low as practicable" standard.

Observations: Section 3113 gives the NNSA Administrator complete authority to establish and conduct oversight of NNSA activities outside of that already established by the Secretary. The Administrator develops a system of governance, management, and oversight of covered contractors, and ensures that any and all federal agencies comply with this system. Clearly, this vacates the notion of independent oversight, which should be of grave concern to the Congress. Other agencies that presently provide oversight include the Board, NRC, the Environmental Protection Agency, the Department of Transportation, and the Occupational Safety and Health Administration.

Section 3113 further directs the NNSA Administrator to "conduct oversight based on outcomes and performance-based standards rather than detailed, transaction-based oversight." NNSA defines "transactional oversight" as activities that assess contractor performance through evaluating contractor activities at the work, task, or facility level; direct interaction with personnel at any level within the contractor organization; and direct independent federal staff evaluation of activities, physical conditions, and contractor documentation. NA-1 SD 226.1A, *NNSA Line Oversight and Contractor Assurance System Supplemental Directive*.

Performance-based oversight is inappropriate to ensure the safety of complex, high-hazard nuclear operations at defense nuclear facilities. Transactional oversight is essential at the Pantex Plant where nuclear weapons are assembled, disassembled, and undergo surveillance. It is also essential for plutonium operations at the Los Alamos Plutonium Facility; highly-enriched uranium operations at the Y-12 National Security Complex; and for complex, high-hazard nuclear operations at the Nevada National Security Site, Lawrence Livermore National Laboratory, and Sandia National Laboratories. For these activities, anything other than transactional oversight is irresponsible and will jeopardize the NNSA mission. An effective nuclear safety oversight program involving complex, high-hazard nuclear operations must be relied on to identify and mitigate potential vulnerabilities before serious injury occurs, which requires detailed transactional oversight. The government cannot delegate its responsibility to ensure public and worker safety to its contractors.

Conclusion

The Board's mission is to make recommendations to DOE to ensure the safety of workers and the public from the hazards of defense nuclear facilities. A competent nuclear safety program must have robust safety standards and demanding oversight and enforcement to assure the adequate protection of the public. Congress carefully constructed the Board's enabling statute based on an extensive legislative record and the weighing of many opposing views and ideas. The statute resulting from this effort follows a middle course between excessive and costly regulation on the one hand and inadequate safety oversight on the other. A comprehensive inquiry should be undertaken before enacting changes to the Atomic Energy Act and the NNSA Act that diminish the Board's ability to carry out its original mission.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

Jessie H. Roberson
Vice Chairman

John E. Mansfield, Ph.D.
Member

Joseph F. Bader
Member

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

July 3, 2012

The Honorable Dianne Feinstein
Chairman
Committee on Appropriations
United States Senate
Washington, D.C. 20510-0504

The Honorable Lamar Alexander
Ranking Member
Sub-Committee on Energy
and Water Development
United States Senate
Washington, D.C. 20510-4206

Dear Chairman Feinstein and Ranking Member Alexander

I am writing to you with an update regarding the implementation of Title IV of the Consolidated Appropriations Act, 2012, Public Law 112-74, which provided that:

> [W]ithin 90 days of enactment of this Act, the Defense Nuclear Facilities Safety Board shall enter into an agreement for inspector general services with the Office of Inspector General for the Nuclear Regulatory Commission for fiscal years 2012 and 2013: *Provided further,* That at the expiration of such agreement, the Defense Nuclear Facilities Safety Board shall procure inspector general services annually thereafter.

In efforts to enter into an agreement for inspector general services, the Defense Nuclear Facilities Safety Board (Board) has had extensive discussions with the Office of the Inspector General of the Nuclear Regulatory Commission, Offices of the Inspector General of ten other agencies, and the Council of Inspectors General for Government Integrity (CIGI). To date, these efforts by the Board to enter into an agreement for inspector general services appropriate to the Board's operation and size have been unsuccessful.

The Board notes that there are differing provisions concerning inspector general services for the Board in the Senate and House versions of the Energy and Water Development Appropriations Act for Fiscal Year 2013 (S.2465 and H.R. 5325). As these differences are resolved, the Board will work to obtain inspector general services consistent with congressional direction.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
Washington, DC 20004-2901

August 10, 2012

The Honorable Rodney Frelinghuysen
Chairman
Subcommittee on Energy
and Water Development
Committee on Appropriations
U.S. House of Representatives
2362-B Rayburn House Office Building
Washington, DC 20515

The Honorable Pete Visclosky
Ranking Minority Member
Subcommittee on Energy
and Water Development
Committee on Appropriations
U.S. House of Representatives
H-307 Capitol Building
Washington, DC 20515-6015

Dear Chairman Frelinghuysen and Ranking Minority Member Visclosky:

I am writing to you with an update regarding the implementation of Title IV of the Consolidated Appropriations Act, 2012, Public Law 112-74, which provided that:

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The Defense Nuclear Facilities Safety Board (Board) has had extensive discussions with the Office of the Inspector General of the Nuclear Regulatory Commission and with the Offices of Inspector General of ten other agencies to obtain inspector general services appropriate to the Board's operation and size. These efforts were unsuccessful.

On August 8, 2012, the Board separately procured inspector general services for the remainder of fiscal year 2012 from Mosley and Associates, a group of extremely experienced retired federal inspectors general. For fiscal year 2012, inspector general services will include technical assistance for management of the Board's financial statement and Federal Information Systems Management Act (FISMA) audit to ensure compliance with the requirements of the Accountability of Tax Dollars Act of 2002, as amended and implementing OMB directives. In addition, the Board will obtain a thorough review of its programmatic and administrative

programs. The contractor will be directed to supply a copy of any report directly to you and to the Congressional defense committees.

The Board notes that there are differing provisions concerning inspector general services for the Board in the Senate and House versions of the Energy and Water Development Appropriations Act for Fiscal Year 2013 (S.2465 and H.R. 5325). As the differences are resolved, the Board will work to obtain inspector general services consistent with congressional direction.

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Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

August 10, 2012

The Honorable Dianne Feinstein
Chairman
Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, D.C. 20510-0504

The Honorable Lamar Alexander
Ranking Member
Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, D.C. 20510-4206

Dear Chairman Feinstein and Ranking Member Alexander:

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The Defense Nuclear Facilities Safety Board (Board) has had extensive discussions with the Office of the Inspector General of the Nuclear Regulatory Commission and with the Offices of Inspector General of ten other agencies to obtain inspector general services appropriate to the Board's operation and size. As I reported to you in my letter dated July 3, 2012, these efforts were unsuccessful.

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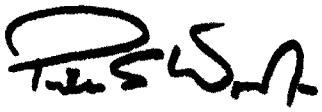
Sincerely,



Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

August 10, 2012

The Honorable Daniel K. Inouye
Chairman
Committee on Appropriations
United States Senate
S-128 Capitol Building
Washington, DC 20510

The Honorable Thad Cochran
Vice Chairman
Committee on Appropriations
United States Senate
S-128 Capitol Building
Washington, DC 20510

Dear Chairman Inouye and Vice Chairman Cochran:

I am writing to you with an update regarding the implementation of Title IV of the Consolidated Appropriations Act, 2012, Public Law 112-74, which provided that:

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Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

August 10, 2012

The Honorable Harold D. Rogers
Chairman
Committee on Appropriations
United States House of Representatives
H-307 Capitol Building
Washington, DC 20515

The Honorable Norman D. Dicks
Ranking Minority Member
Committee on Appropriations
United States House of Representatives
H-307 Capitol Building
Washington, DC 20515-6015

Dear Chairman Rogers and Ranking Minority Member Dicks:

I am writing to you with an update regarding the implementation of Title IV of the Consolidated Appropriations Act, 2012, Public Law 112-74, which provided that:

> [W]ithin 90 days of enactment of this Act, the Defense Nuclear Facilities Safety Board shall enter into an agreement for inspector general services with the Office of Inspector General for the Nuclear Regulatory Commission for fiscal years 2012 and 2013: *Provided further,* That at the expiration of such agreement, the Defense Nuclear Facilities Safety Board shall procure inspector general services annually thereafter.

The Defense Nuclear Facilities Safety Board (Board) has had extensive discussions with the Office of the Inspector General of the Nuclear Regulatory Commission and with the Offices of Inspector General of ten other agencies to obtain inspector general services appropriate to the Board's operation and size. These efforts were unsuccessful.

On August 8, 2012, the Board separately procured inspector general services for the remainder of fiscal year 2012 from Mosley and Associates, a group of extremely experienced retired federal inspectors general. For fiscal year 2012, inspector general services will include technical assistance for management of the Board's financial statement and Federal Information Systems Management Act (FISMA) audit to ensure compliance with the requirements of the Accountability of Tax Dollars Act of 2002, as amended and implementing OMB directives. In addition, the Board will obtain a thorough review of its programmatic and administrative programs. The contractor will be directed to supply a copy of any report directly to you and to the Congressional defense committees.

The Board notes that there are differing provisions concerning inspector general services for the Board in the Senate and House versions of the Energy and Water Development Appropriations Act for Fiscal Year 2013 (S.2465 and H.R. 5325). As the differences are resolved, the Board will work to obtain inspector general services consistent with congressional direction.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

January 25, 2013

The Honorable Michael R. Turner
Member
Subcommittee on Strategic Forces
Committee on Armed Services
U.S. House of Representatives
2239 Rayburn House Office Building
Washington, DC 20515-6035

Dear Congressman Turner:

Thank you for your December 20, 2012, letter concerning actions taken by the Defense Nuclear Facilities Safety Board (Board) regarding inspector general services. Your letter and the accompanying Congressional Research Service (CRS) memorandum questioned whether the Board may have violated the Purpose Statute [31 U.S.C. § 1301(a)] and a provision of the Anti-Deficiency Act [31 U.S.C. § 1341(a)] by entering into a contract with EAM, Inc., doing business as Mosley & Associates (Mosley), a private auditing and consulting firm. Following a thorough review of your letter and the CRS memorandum, the Board's position is that its actions did not constitute a violation of either the Purpose Statute or the Anti-Deficiency Act.

The 2012 Consolidated Appropriations Act [Public Law 112-74] appropriated funding for the salaries and expenses of the Board for fiscal year 2012. The act contained language requiring the Board to enter into an agreement to procure inspector general services from the Nuclear Regulatory Commission Inspector General (NRC-IG):

> "For necessary expenses of the Defense Nuclear Facilities Safety Board in carrying out activities authorized by the Atomic Energy Act of 1954, as amended by Public Law 100-456, section 1441, $29,130,000, to remain available until September 30, 2012: *Provided, That within 90 days of enactment of this Act, the Defense Nuclear Facilities Safety Board shall enter into an agreement for inspector general services with the Office of Inspector General for the Nuclear Regulatory Commission for fiscal years 2012 and 2013...*" (Emphasis added).

The language requiring the Board's procurement of NRC-IG services did not define the scope of inspector general services envisioned for the Board. The language simply called for "inspector general services." In contrast, other provisions in the appropriations act funding small agency offices of inspector general provide unequivocal direction for "carrying out the provisions of the Inspector General Act of 1978" and/or for "audit, investigatory, and review activities, as authorized by the Inspector General Act of 1978." [See, e.g., Public Law 112-74, 125 Stat. 909, 1108]. Where Congress includes particular language in one section of a statute

but omits it in another, it is reasonable to presume that Congress acts intentionally and purposely in the disparate inclusion or exclusion. [Russello v. United States, 464 U.S. 16, 23 (1983)]. The omitted language thus led the Board to believe that, based on its size and operations, the full suite of inspector general services provided by the Inspector General Act of 1978 was not contemplated. The Board believed that had Congress intended it to retain such services, Congress would have explicitly directed it to do so. Absent such language, the Board interpreted the act as requiring less than the comprehensive collection of services offered by the Inspector General Act of 1978.

The funding provision was also silent regarding how much of the $29.13 million appropriated to the Board should be allocated to inspector general services. Neither the Board nor the NRC was provided with specific line-item funding to carry out this provision. Moreover, neither the Board nor the NRC-IG received any other guidance on a spending cap for NRC-IG services. The initial cost estimates provided by the NRC-IG were approximately $400,000 for the remainder of fiscal year 2012 and $800,000 for fiscal year 2013. The Board considered those estimates excessive and disproportionately high for the Board's size and extent of operations. The Board also had significant concerns that it could be viewed as exceeding its fiscal authority if it dedicated almost three percent of its annual operating budget to securing inspector general services. In fact, the Board was genuinely concerned that interpreting the need to "acquire IG services" as full implementation of the Inspector General Act of 1978 might have been perceived by some congressional defense committees as a direct violation of the Anti-Deficiency Act.

The Board engaged in substantial negotiations with the NRC-IG from January through March 2012 to try and reach a comprehensive and mutually acceptable memorandum of agreement. Despite extensive good faith efforts by both agencies to comply with the statutory directive, negotiations were unsuccessful. The breakdown in communication was primarily due to differing interpretations by both agencies regarding the scope and cost of the services to be provided. Specifically, the NRC-IG disagreed with the Board's construction of the funding provision, and refused to contract for reduced inspector general services. Consequently, agreement on the scope and cost became a significant and ultimately insuperable negotiation challenge.

To further complicate matters, in April and May of 2012, conflicting provisions concerning inspector general services for the Board emerged in the Senate and House versions of the fiscal year 2013 Energy and Water Development Appropriations Act. The Senate version would impose dual obligations on the NRC-IG. In addition to its preexisting duties, the NRC-IG would now act as the Board's IG, and assign personnel to perform this work. To do so, the Senate bill would appropriate $850,000 directly to the NRC-IG. Conversely, the House version would appropriate $200,000 to the Board for NRC-IG services. These provisions overlap with the 2012 Consolidated Appropriations Act requirement addressed in this letter, leaving the Board in the position of potentially having to satisfy multiple conflicting inspector general requirements. The inability of the Board and NRC-IG to resolve the scope and cost issues, compounded by the emergence of conflicting Congressional direction for inspector general services, effectively barred an agreement.

Given these divergent statutory provisions, the Board was incapable of complying with any one statutory requirement without undercutting another. In an effort to obtain clarity regarding its IG obligation, the Board communicated its dilemma to the House and Senate Appropriations Committees on a number of occasions. The Board first contacted the House and Senate Appropriations Committees on March 20, 2012. In those letters, the Board informed the Committee Chairmen of its unsuccessful efforts to finalize an agreement for IG services with the NRC. The Board further stated that the failed negotiations stemmed from a disagreement over the appropriate level and scope of IG services for the Board. The Board sent a follow-up letter to the Chairman of the Senate Appropriations Committee on July 3, 2012. That letter also notified the Senate Appropriations Committee that the Board's efforts to reach an agreement with NRC-IG for IG services appropriate to its size and mission were unsuccessful. The Board anticipated such communications would yield further congressional direction on how to resolve the competing requirements.

The Mosley contract was an initiative the Board took to demonstrate its commitment to undergoing scrutiny and transparency, and to effectuate efficient, reliable operations to meet its commitment to the taxpayer. Moreover, the Mosley contract also qualifies as an action taken to ensure audits are conducted of the Board's programs and operations in accordance with standards of governmental organizations, consistent with the Inspector General Act of 1978. [5 U.S.C. Appx § 8G]. This requirement is applicable to Federal entities that do not have an existing Inspector General. The Mosley contract was never intended to serve as a substitute for the NRC-IG requirement contained in the 2012 appropriations language. The Board's August 10, 2012, letters to the House and Senate Appropriations Committees incorrectly used the phrase "inspector general services" to characterize the Mosley contract. The following excerpt from the Board's contract with Mosley more accurately demonstrates the Board's intent:

> FY 2013 authorization and appropriation committee language include differing provisions for the Board to obtain IG services from another Government agency or for the Nuclear Regulatory Commission IG to also serve as the Board's IG. Pending resolution of final Congressional language, [the] Board desires to contract for a risk assessment of its programmatic and administrative operations, and (based on the risk assessment), a draft FY 2013 audit plan, as an *initial step in preparing for obtaining IG services* or having an IG. (Emphasis added).

The Mosley review was accomplished for the purpose of producing an interim, snapshot-in-time evaluation and assessment of programmatic and administrative risks to improve the efficiency of Board operations. The Board was acutely aware of the fact that it had no internal, independent process to review the efficiency of its operations. The Board recognized the significant value such reviews have in identifying vulnerabilities that lead to improvements in future agency operations. The Board did not rely on the NRC-IG language contained in the 2012 Consolidated Appropriations Act as the legal basis for the Mosley contract. Rather, the Mosley contract was executed pursuant to the Board's general statutory authority to enter into agreements with outside experts chosen by the Board to assist the Board in carrying out its responsibilities [42 U.S.C. § 2286b(g)], and is expressly contemplated by the Inspector General Act of 1978. [5 U.S.C. Appx § 8G].

For the aforementioned reasons, the Board respectfully concludes that it did not violate the Purpose Statute or the Anti-Deficiency Act when it contracted with Mosley. With regard to future compliance, the National Defense Authorization Act (NDAA) for Fiscal Year 2013 [Public Law 112-239], combined with the clarifying language of the accompanying Joint Explanatory Statement, resolves many of the ambiguities concerning inspector general services for the Board beginning in FY 2014. Specifically, the NDAA requires the Board to enter into an agreement with an agency of the Federal Government having expertise in the Board's mission for inspector general services in accordance with the Inspector General Act of 1978 by October 1, 2013. The improved statutory language will significantly assist the Board in acquiring appropriate inspector general services.

The Board will initiate and reengage with the NRC-IG to obtain IG services for the remainder of FY 2013. Additionally, the Board is submitting a revised Memorandum of Understanding to the NRC-IG for their consideration.

The Board is prepared to meet with you or your staff to discuss further our actions and conclusions on this matter. Thank you for your letter and for your continued interest in the Board's effectiveness.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
Washington, DC 20004-2901

February 14, 2013

The Honorable Howard P. "Buck" McKeon
Chairman
House Armed Services Committee
United States House of Representatives
2310 Rayburn House Office Building
Washington, DC 20515

The Honorable Adam Smith
Ranking Member
House Armed Services Committee
United States House of Representatives
2264 Rayburn House Office Building
Washington, DC 20515

Dear Chairman McKeon and Ranking Member Smith:

The Joint Explanatory Statement of the Committee of Conference accompanying the Conference Report for the National Defense Authorization Act for Fiscal Year 2013 directed the Chairman of the Defense Nuclear Facilities Safety Board to ". . . submit a report to the congressional defense committees by February 15, 2013, regarding how the DNFSB considers the technical and economic feasibility of implementing its recommended measures." (Report, p. 394)

On behalf of the DNFSB, I am pleased to submit the report appended to this letter in response to the Conference Committee's direction.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

cc: The Hon. Mike Rogers, Chairman, House Armed Services Strategic Forces Subcommittee
The Hon. Jim Cooper, Ranking Member, House Armed Services Strategic Forces Subcommittee

Board Interpretation of "Technical and Economic Feasibility"

I. Introduction

The Board's enabling act, 42 U.S.C. § 2286 et seq., tasks the Board with issuing recommendations to the Secretary of Energy regarding public health and safety at the Department of Energy's (DOE's) defense nuclear facilities. Section 2286(a)(5) contains the following requirement: "In making its recommendations, the Board shall consider the technical and economic feasibility of implementing the recommended measures."[1] In this report, the Board explains how it implements this statutory requirement.

II. Overview

It is the role of the five Board Members, nominated by the President and confirmed by the Senate as recognized experts in nuclear safety matters, to individually make their own decision on whether the recommendation they are considering is technically and economically feasible. Such a decision is made based on a careful consideration by each Board Member individually of the sum total of the information, data, briefings and technical discussions held with/provided by DOE and Board staff. This material is made available over the considerable period of time from initial consideration of a safety issue and whether it rises to the level of a recommendation through final approval/denial of the proposed draft before the Board Member.

The Board considers technical feasibility by ensuring that each recommendation is capable of implementation using generally accepted scientific and engineering principles. The Board considers economic feasibility by comparing the rough order of magnitude cost of alternative approaches and structuring recommendations so as to allow the Secretary flexibility in designing cost-effective actions needed to address Board recommendations. The Board does not use a cost-benefit analysis formula.

The Board's consideration of technical and economic feasibility is guided by the substantial legislative record surrounding the development and approval of the Board's enabling act by Congress. The principal sponsor of the Board's enabling act in the late 1980s was Senator John Glenn of Ohio, then Chairman of the Senate Committee on Governmental Affairs. Senator Glenn introduced S. 1085, the "Nuclear Protections and Safety Act of 1987," in April of 1987. The Committee on Governmental Affairs reported on the bill on September 24, 1987, in Senate Report 100-173 which addressed the subject of "technical and economic feasibility," quoted in full below:

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[1] This provision was recently amended by the National Defense Authorization Act for Fiscal Year 2013 to read: "In making its recommendations, the Board shall consider, *and specifically assess risk (whenever sufficient data exists)*, the technical and economic feasibility of implementing the recommended measures" (emphasis added).

> [I]n making its recommendations, the Board is directed to consider technical and economic feasibility. This is not a cost-benefit analysis formula. The Board's recommendations to substantially reduce the likelihood that events will occur at any DOE nuclear facilities should not be restricted by cost. Technical feasibility requires that the Board's recommendation be capable of implementation using generally accepted scientific and engineering principles. Addressing economic feasibility means that in seeking to reduce risks, the Board should compare the costs of alternative approaches so as to structure any recommendation in an economic manner. For example, the Board may determine that it will cost five hundred million dollars ($500,000,000) to reduce substantially the likelihood of a nuclear event at a twenty-year-old DOE production reactor, which has an expected useful life of twenty-three to twenty-five years and a replacement value of one billion dollars ($1,000,000,000). Under those circumstances, the Board could indicate what technical and engineering improvements would be needed to repair the existing facility so that it could achieve acceptable standards for continued operation, but recommend closing such an old facility and accelerating the planning and construction of a new, replacement facility as a more economic use of federal dollars.[2]
>
> Fifth, subsection (g)(6)(A) directs the Board in making recommendations to consider technical and economic feasibility. This standard does not require the Board to make formal findings concerning economic or technical feasibility. It is further recognized that the Board's recommendations will never be subject to scientific or economic certainties or be without controversy. Inevitably there will be instances where the Secretary believes the Board has not properly evaluated the data and reached correct conclusions concerning the safety of DOE's facilities. In those instances where the Secretary believes the Board's recommendation addresses a non-existent or extremely remote technical possibility, and implementing the changes will be extremely burdensome, the Secretary may disagree with the Board utilizing subsections (h)(1)(A) and (h)(2)(B)(i). The burden of demonstrating that a recommendation is not technically or economically feasible rests with the Secretary. If the Secretary disagrees with the Board's recommendation on these grounds, subsection (h)(2)(B)(i) requires the Secretary to report the disagreement to Congress and the President, along with the reasons for the Secretary's decision.[3]

S. 1085 was referred to the Senate Committee on Armed Services, then chaired by Senator Sam Nunn of Georgia. This committee reported on the bill on November 20, 1987. While the committee recommended a number of changes to the bill, it did not modify the "technical and economic feasibility" requirement for Board recommendations. The committee offered the following comment:

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[2] S. REP. NO. 100-173, at 28-29 (1987).
[3] *Id.* at 30.

> [I]n making its recommendations, the Board is directed to consider technical and economic feasibility. Technical feasibility requires that the Board's recommendations be capable of implementation using generally accepted scientific and engineering principles. Economic feasibility means that the Board may compare the cost of alternative approaches and structure its recommendations so as to reflect cost comparisons. The Board may compare the costs of alternative approaches to achieving adequate protection of public health and safety. The Board may consider such factors as the remaining useful life of facilities, schedules and plans for replacing them, and means to mitigate disruptions to ongoing operations that may result from recommended safety improvements, and other considerations.[4]

The Board has followed the guidance provided by the Senate committees during the ensuing 23 years and 57 formal recommendations.

The following three general principles can be extracted from the committee reports:

- The requirement to consider technical and economic feasibility "is not a cost-benefit formula."[5]
- The Board is not required "to make formal findings concerning economic or technical feasibility."[6]
- "The burden of demonstrating that a recommendation is not technically or economically feasible rests with the Secretary."[7]

The first of these principles is a direct consequence of the enabling act requirement that the Board determine a recommendation is "necessary to ensure adequate protection of public health and safety."[8] Hence, recommendations are not to concern safety above and beyond the Atomic Energy Act standard, but rather should look to achieving that standard of adequate protection. The courts have held that, unless required by statute, cost may not be weighed against measures needed to meet the statutory standard.[9]

The second and third principles are interrelated. The language of the statute directs the Board to "consider" technical and economic feasibility, yet Congress was aware that the Board would ultimately have to defer to the Secretary on application of these criteria. This is so because the Secretary is assigned the task of evaluating the Board's recommendations before drafting and providing to the Board an implementation plan. Part of this task involves deciding

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[4] S. REP. NO. 100-232, at 26 (1987).
[5] *supra* note 1.
[6] S. REP. NO. 100-173, at 28-29 (1987).
[7] *Id.*
[8] *Id.* at 5-7 (discussing the "adequate protection" standard to be used by the Board).
[9] *See* Union of Concerned Scientists v. U.S. Nuclear Regulatory Comm'n, 880 F.2d 552 (D.C. Cir. 1989); Union of Concerned Scientists v. U.S. Nuclear Regulatory Comm'n, 824 F.2d 108 (D.C. Cir. 1987), *reh'g en banc den.* 859 F.2d 237.

the best means to implement the safety objectives set forth in the recommendation. It therefore follows that the ultimate burden of deciding on technical and economic feasibility properly rests with the Secretary.

III. Development of a Recommendation

Before moving to a discussion of the two separate criteria, it is important to explain how the Board decides to issue a recommendation. Prior to the preparation of a recommendation, the Board and its staff will have evaluated the safety implications as well as technical and regulatory issues of concern. This evaluation is comprised of many activities: Board Member and staff visits to affected sites; briefings to the Board by DOE and its contractors; exchanges of formal correspondence; staff-to-staff meetings; reports to the Board submitted under a reporting requirement; and, in some cases, public hearings. By the time a recommendation is considered, DOE will be fully aware of the Board's concerns and will have provided much of the information relied on by the Board to formulate its position. None of the Board's 57 recommendations have been issued without this level of review and analysis.

The Board applies its deep understanding of DOE's nuclear facilities, underlying technologies, programs, standards, and procedures to avoid recommending measures that simply cannot be implemented. The Board has always been pragmatic in its review of alternative means and methods proposed by DOE to meet the intent of a recommendation. In the great majority of cases, DOE has been able to develop an implementation plan suitable to address the safety problems of concern to the Board. However, disagreements have arisen over priorities, risks, and safety criteria. These disagreements were expected by Congress: "Inevitably there will be instances where the Secretary believes the Board has not properly evaluated the data and reached correct conclusions concerning the safety of DOE's facilities."[10] All regulatory and oversight systems involve tension over complex problems. The Board believes that the best approach to satisfying Congressional intent is to be extremely thorough in exploring safety concerns prior to considering whether a recommendation to the Secretary is needed.

IV. Technical Feasibility

Both Senate reports include the same criterion for technical feasibility: is the recommended measure "capable of implementation using generally accepted scientific and engineering principles"?[11] This criterion would apply principally in cases where the Board recommends that DOE take specific physical actions such as installing new equipment, upgrading a safety system, engaging in a test program, and the like, as opposed to setting out a desired result without specifying means. Of its recommendations issued to date, 10 fall into this category.[12] In its other 47 recommendations, the Board is recommending that DOE address

[10] S. REP. NO. 100-173, at 28-29 (1987).
[11] *supra* note 1; *id.* at 30.
[12] Recommendations 90-1, 90-3, 90-7, 93-5, 95-1, 2000-1, 2004-2, 2010-2, 2012-1, 2012-2.

concerns in its safety framework, including safety management programs dealing with fire protection, quality assurance, confinement ventilation, packaging, and administrative controls.

Assurance of technical feasibility of recommended measures is provided by three factors. First, the Board Members themselves are legally required to be recognized experts in the field of nuclear safety and thus trained in physics, chemistry, nuclear engineering, and mathematics. Second, the Board has recruited and maintains a technical staff holding advanced degrees in nearly every technical discipline applicable to defense nuclear facilities. Outside experts are regularly engaged (as authorized by the Board's enabling legislation) whenever specialized knowledge is required. Third, the corporate knowledge represented by the Board Members and its staff extends into every field of nuclear science and engineering, from theory through to implementation, including construction, operations, and project management. Taken together, these factors enable the Board to assure that prior to issuing a recommendation, the technical measures necessary to address the recommendation are readily available should DOE choose to implement them. Specific examples of recent recommendations are included in Section VI below.

Additional assurance is provided by the fact that the Secretary has not responded to any Board recommendation by arguing that the measures requested by the Board are "technically infeasible." This record gives the Board confidence that it has faithfully followed the guidance of Congress to recommend measures "capable of implementation using generally accepted scientific and engineering principles."

V. Economic Feasibility

Congressional guidance on this criterion can be summarized in these three points:

- The burden of demonstrating that a recommended measure "will be extremely burdensome" to implement rests with the Secretary.[13]
- The Board may compare the cost of alternative approaches and structure its recommendations so as to reflect cost comparisons.
- The Board may consider such factors as the remaining useful life of facilities, schedules and plans for replacing them, and means to mitigate disruptions to ongoing operations that may result from recommended safety improvements, and other considerations.

The reason for the first of these has already been noted: only DOE can estimate with any accuracy the precise cost of implementing Board recommendations. In most recommendations the Board identifies a safety concern and safety objectives, but leaves up to the Secretary what specific actions will be taken. Moreover, the Board lacks the resources, expertise, and information base on which to make financial estimates.

[13] S. REP. NO. 100-173, at 28-29 (1987).

In formulating the specifics of its recommendations and evaluating implementation plans, the Board does take into account such factors as "the remaining useful life of facilities, schedules and plans for replacing them, and means to mitigate disruptions to ongoing operations that may result from recommended safety improvements,"[14] and other considerations. Sometimes, the Board considers safety issues in an old DOE facility that may not be replaced for some years, if ever.[15] A recent example is the Board's consideration of newly-discovered seismic deficiencies which led to Recommendation 2009-2, *Los Alamos National Laboratory Plutonium Facility Seismic Safety.* [16]

> Near-term actions and compensatory measures to reduce significantly the consequences of seismically induced events will likely involve operating the facility with restrictions on material-at-risk, removing inventory from susceptible locations or storing material in robust containers, and reducing the likelihood of a fire following a seismic event by identifying and implementing appropriate safety measures. Consistent with the Board 's Recommendation 2004-2, *Active Confinement Systems*, one long-term strategy that could provide effective mitigation for seismic events involves upgrading the facility's confinement ventilation system to meet seismic performance category 3 criteria. This strategy would allow the confinement ventilation system to reduce reliably the consequences of a seismically induced event by many orders of magnitude to acceptably low values.

When NNSA learned of a significant increase in the estimated ground motion that the Los Alamos Plutonium Facility could experience during an earthquake, the Board carefully considered the subsequent dose consequence to the public following such an event. The Board then purposely crafted Recommendation 2009-2 so as to give the Secretary maximum latitude to choose the most effective remedies. A wide range of economically-feasible remedies were considered by the Board, including reduction of material-at-risk (MAR), changes in facility operations, and facility replacement. Recommendation 2009-2 identified the severity and urgency of the situation and called for an acceptable safety strategy involving both immediate and long term actions to reduce this risk. As noted above, the Board recommended that installation of an active confinement ventilation system be considered as part of an effective long-term strategy for risk-reduction. In short, the Board identified the risk to the public, and further

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[14] *Budget Request for Department of Energy Atomic Energy Defense Activities and Department of Defense Nuclear Forces Program: Hearing Before the Subcomm. on Strategic Forces of the H. Comm. on Armed Services*, 112th Cong. 5-6 (2011) (statement of Dr. Peter S. Winokur, Chairman, Defense Nuclear Facilities Safety Board).

[15] Congress expected this situation to occur: "Under those circumstances, the Board could indicate what technical and engineering improvements would be needed to repair the existing facility so that it could achieve acceptable standards for continued operation, but recommend closing such an old facility and accelerating the planning and construction of a new, replacement facility as a more economic use of federal dollars." S. Rep. No. 100-173, at 28-29 (1987).

[16] Issued October 26, 2009.

identified a wide range of economically-feasible remedies, then left it to the Secretary to select the specific remedial measures and timetable for implementation.

VI. Application of Principles to Recent Recommendations

In 2012 the Board issued two recommendations, both dealing with highly technical problems at defense nuclear facilities. On May 9, 2012, the Board transmitted Recommendation 2012-1, *Savannah River Site Building 235-F Safety*, to the Secretary of Energy. This recommendation dealt with removing plutonium-238 (Pu-238) contamination from an inactive facility. Recommendation 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*, sent to the Secretary on September 28, 2012, addressed a serious safety problem at the Hanford Tank Farms. In both cases, the Board was fully informed as to the nature of the safety problem and recommended technically and economically feasible measures that should resolve the issues in a reasonable period of time.

Recommendation 2012-1

Building 235-F at the Savannah River Site no longer has a programmatic mission. It is operated in a surveillance and maintenance mode, is normally unoccupied, and houses several partially deactivated processing lines. With the exception of residual contamination, Building 235-F has been de-inventoried of special nuclear material. This residual contamination constitutes the principal hazard and includes a significant quantity of Pu-238. Pu-238 in this facility is in the form of highly dispersible, fine powder. This form increases the potential dose consequences associated with a release.

The Board first identified the need to remove Pu-238 from Building 235-F in a 2003 letter to the Secretary of Energy: "In particular, Building 235-F was anticipated to be shut down in the near future, but now is planned to be used for long-term storage and related operations...the risk from several hazards ha[s] been accepted rather than eliminated (e.g., combustible inactive cables in KAMS and ... plutonium-238 contamination in Building 235-F)."[17] Later in 2003, the Board filed a special report requested by Congress. The Board stated in regard to this same facility:

> DOE should carry out its plan to remove and characterize plutonium materials currently stored in 235-F. DOE should not plan extended storage of plutonium in 235-F until it has completed implementing the proposals in this report. It may be preferable from safety, cost, and mission perspectives to pursue storage elsewhere at SRS. Options include an enhanced KAMS facility, a new storage facility, or an expanded PDCF.[18]

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[17] Letter from John T. Conway, Chairman, Defense Nuclear Facilities Safety Board, to the Hon. E. Spencer Abraham, Secretary, U.S. Dep't of Energy (June 12, 2003). This letter was based on several years of work by the Board's technical staff in the form of onsite inspections of Building 235-F and review of DOE's documentation of the building's radioactive inventory.

[18] DEFENSE NUCLEAR FACILITIES SAFETY BOARD, STUDY OF FACILITIES FOR STORAGE OF PLUTONIUM AND PLUTONIUM MATERIALS AT SAVANNAH RIVER SITE 2-5 (2003).

The Board reiterated this concern in a second report to Congress in 2005. In that report, the Board stated:

> The Board notes that DOE-SR intends to continue making some structural and equipment upgrades to 235-F. DOE-SR considers these upgrades necessary to provide confinement of plutonium-238 holdup in old processing cells should there be a significant earthquake. The presence of extensive plutonium-238 holdup is one of the most significant hazards in 235-F. The Board believes the first priority for DOE-SR should be to decontaminate the process cells to eliminate this hazard. Any structural or equipment improvements would be warranted only if the effort to decontaminate the plutonium-238 holdup were protracted. The Board will continue to follow this issue in the course of its normal safety oversight for the site.[19]

On a number of occasions from 2005 to 2012, DOE evaluated options and developed plans to remove Pu-238 residual contamination from this facility. However, because these efforts never moved beyond the planning stage, the Board found it necessary to recommend that the Secretary take action to reduce the radiological hazard of this deteriorating facility. By 2012, the Board and its staff had been involved in the technical issues presented for more than a decade. During that period, the Board had the opportunity to review DOE's own plans for Pu-238 decontamination, plans that were never put into effect. The Board became increasingly concerned that ventilation and fire protection systems were continuing to degrade. In addition, the construction of the MOX facility in recent years had placed many additional workers at risk.

Recommendation 2012-1 thus identified the need for DOE to take near-term actions to more effectively prevent a major fire in Building 235-F and to take action to remove and/or immobilize the residual contamination within Building 235-F because of the potential dose consequences to collocated workers and the public.

As regards to technical feasibility, the Board recommended near-term actions to reduce the fire hazards in Building 235-F from combustibles and electrical ignition sources. The Board pointed to a September 2011 walkdown of Building 235-F by Board staff that specifically identified a significant quantity of transient and fixed combustibles and unnecessary, non-air gapped electrical equipment. Remedial measures clearly involved generally accepted practices. The recommendation further addressed hazards associated with residual contamination. The Board understood that immobilization and/or removal of the hazardous material involved standard engineering practices.

As regards economic feasibility, the Board considered DOE's previous evaluations and plans to immobilize and/or remove residual Pu-238 contamination. The Board further understood that as an alternative to immobilization/removal of residual contamination,

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[19] DEFENSE NUCLEAR FACILITIES SAFETY BOARD, STUDY OF FACILITIES FOR STORAGE OF PLUTONIUM AND PLUTONIUM MATERIALS AT SAVANNAH RIVER SITE 2-4 (2005).

physical upgrades to fire and ventilation safety systems could also have resulted in adequate protection. However, given the lack of facility mission and remaining life, and the likelihood that immobilization/removal would ultimately be necessary, physical upgrades (other than early warning smoke and fire alarms) were understood to be economically inefficient. Accordingly, Recommendation 2012-1 advised the Secretary to take immediate, low cost actions such as removal of combustibles, de-energization and air-gapping of electrical ignition sources, evaluation of early detection alarm systems, and upgrades to the emergency response plan. The Secretary was further advised to immobilize or remove residual contamination as a long-term measure by whatever method the Secretary found to be most efficient and effective.

On July 10, 2012, the Secretary of Energy accepted the recommendation. In his acceptance letter, the Secretary stated:

> DOE agrees with the Board that action must be taken to reduce the hazards associated with the material at risk that remains as residual contamination within Building 235-F. The Board acknowledged in its letter that DOE has taken action to de-inventory Building 235-F of special nuclear material. DOE has also taken action to remove the transient combustible material within Building 235-F and to limit access. In developing an Implementation Plan, DOE will address all sub-recommendations with the ultimate goal of reducing, to the extent feasible, the radiological hazards from residual contamination and the fire hazards due to excessive combustible materials and electrical ignition sources . . . We look forward to working with the Board as we work to reduce the hazards posed by Building 235-F.[20]

The Board is now reviewing DOE's implementation plan, submitted on December 5, 2012. The plan identifies no areas of the recommendation that, in DOE's view, are technically or economically infeasible.

Recommendation 2012-2

In this recommendation, the Board requested that DOE take a number of specific actions to reduce the accident threat posed by flammable gases in storage tanks at the Hanford Tank Farms. The ventilation systems for the double-shell tanks (DST's) in the Tank Farms are important in preventing and mitigating potential accidents involving the flammable gases generated by the high-level wastes stored in these tanks. The Tank Farms safety analysis shows that many of the tanks contain sufficient quantities of gas trapped in the waste such that flammability limits could be exceeded if the gases were spontaneously released, which is possible under both normal operating and accident conditions. Furthermore, all the double-shell tanks contain wastes that continuously generate flammable gases and would eventually create a flammable atmosphere in the tank without adequate ventilation. Consequently, ventilating the double-shell tanks will prevent hydrogen explosions in the vessel headspace.

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[20] Letter from the Hon. Steven Chu, Secretary, U.S. Dep't of Energy, to Dr. Peter S. Winokur, Chairman, Defense Nuclear Facilities Safety Board (July 10, 2012).

Tank ventilation has been the preferred safety strategy to adequately protect collocated workers and the public for most of the past two decades.

In 2010, DOE approved downgrading the functional classification of the ventilation systems from safety-significant to general service. In lieu of a credited engineered feature, DOE implemented an administrative control to monitor flammable gas conditions in the tanks. However, the Board identified a number of weaknesses with the administrative control, including the need to effectively measure flow rates in the ventilation system. The weaknesses collectively rendered the control inadequate to perform the specified safety function. The Board further noted that other engineered systems providing indications used in determining whether operators need to take corrective action were not classified as safety significant and would not be qualified or maintained by DOE in accordance with their safety function. The Board documented its concerns in a letter to DOE on August 5, 2010.

In response, DOE issued a letter to the Board on February 25, 2011, stating that it would take action to restore the double-shell tank ventilation systems to safety-significant status and upgrade other monitoring systems to safety-significant status. However, DOE did not make meaningful progress in accomplishing these important commitments. The Board therefore issued Recommendation 2012-2 to bring the issue to the attention of the Secretary.

As regards to technical feasibility, the Board considered the nature and severity of the flammable gas hazards in the Hanford DSTs, the reliability of DOE's chosen safety strategy, and DOE's applicable safety requirements. The Board's recommendation considered that active confinement ventilation is the most effective engineering solution used to prevent the build-up of flammable gases in radioactive waste storage vessels. The technical feasibility of the recommendation was self-evident in that the ventilation systems already existed and had been previously credited and relied upon to perform this vital safety function at the Tank Farms.

As regards to the economic feasibility, the Board specifically recommended that DOE use a graded approach and "... determine the necessary attributes of an adequate active ventilation system that can deliver the required flow rates within the time frame necessary to prevent and mitigate the site-specific flammable gas hazards at the Hanford Tank Farms." In this regard, the Board was sensitive to the costs of recommending extensive upgrades to the existing system. The Board's recommendation recognized that the primary considerations involved reliable flow monitoring and assurance of the prescribed flow rates. Consequently, the Board recommended installing safety related flow monitoring in the tank farm ventilation system and restoring safety related maintenance and testing requirements to the installed active ventilation systems to assure that the required flow rates were met.

The Secretary accepted Recommendation 2012-2 in these terms:

> In developing an Implementation Plan (IP), DOE will take the pragmatic and graded approach detailed below to address the sub recommendations that will significantly improve the robustness of flammable gas controls in the near term. DOE is confident

this is the most expeditious approach to implement a more robust safety control for Double Shell Tank (DST) ventilation monitoring consistent with the intent of Recommendation 2012-2.

* * * *

DOE is committed to the safe operation of its nuclear facilities consistent with the principles of Integrated Safety Management and the Department's nuclear safety requirements. DOE values the Board's input on how the Department can improve its activities. We look forward to working with the Board and its staff on preparing DOE's IP for Recommendation 2012-2.[21]

From these statements it appears that DOE is confident the recommendation can be implemented using a "pragmatic and graded approach" that will fully satisfy the Board's safety objectives. The plan identifies no areas of the recommendation that, in DOE's view, are technically or economically infeasible.

VII. Conclusion

Over a period of some 23 years, the Board has endeavored to follow the guidance provided by Congress in applying the statutory requirement to consider "technical and economic feasibility." Proof that the Board has succeeded rests in the fact the Secretary has accepted every Board recommendation in whole or in part; partial acceptances have not been based on failure to meet the technical and economic feasibility criteria. The Board will continue in every case to pragmatically search for technically sound and economically feasible solutions to safety concerns at defense nuclear facilities, while being mindful of the ultimate requirement that adequate protection be provided to the public.

[21] Letter from the Hon. Steven Chu, Secretary, U.S. Dep't of Energy, to Dr. Peter S. Winokur, Chairman, Defense Nuclear Facilities Safety Board (Jan. 7, 2013).

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
Washington, DC 20004-2901

February 14, 2013

The Honorable Carl Levin
Chairman
Senate Armed Services Committee
United States Senate
269 Russell Senate Office Building
Washington, DC 20510

The Honorable James Inhofe
Ranking Member
Senate Armed Services Committee
United States Senate
205 Russell Senate Office Building
Washington, DC 20510

Dear Chairman Levin and Ranking Member Inhofe:

The Joint Explanatory Statement of the Committee of Conference accompanying the Conference Report for the National Defense Authorization Act for Fiscal Year 2013 directed the Chairman of the Defense Nuclear Facilities Safety Board to ". . . submit a report to the congressional defense committees by February 15, 2013, regarding how the DNFSB considers the technical and economic feasibility of implementing its recommended measures." (Report, p. 394)

On behalf of the DNFSB, I am pleased to submit the report appended to this letter in response to the Conference Committee's direction.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

cc: The Hon. Ben Nelson, Chairman, Senate Armed Services Strategic Forces Subcommittee
The Hon. Jeff Sessions, Ranking Member, Senate Armed Services Strategic Forces Subcommittee

Board Interpretation of "Technical and Economic Feasibility"

I. Introduction

The Board's enabling act, 42 U.S.C. § 2286 et seq., tasks the Board with issuing recommendations to the Secretary of Energy regarding public health and safety at the Department of Energy's (DOE's) defense nuclear facilities. Section 2286(a)(5) contains the following requirement: "In making its recommendations, the Board shall consider the technical and economic feasibility of implementing the recommended measures."[1] In this report, the Board explains how it implements this statutory requirement.

II. Overview

It is the role of the five Board Members, nominated by the President and confirmed by the Senate as recognized experts in nuclear safety matters, to individually make their own decision on whether the recommendation they are considering is technically and economically feasible. Such a decision is made based on a careful consideration by each Board Member individually of the sum total of the information, data, briefings and technical discussions held with/provided by DOE and Board staff. This material is made available over the considerable period of time from initial consideration of a safety issue and whether it rises to the level of a recommendation through final approval/denial of the proposed draft before the Board Member.

The Board considers technical feasibility by ensuring that each recommendation is capable of implementation using generally accepted scientific and engineering principles. The Board considers economic feasibility by comparing the rough order of magnitude cost of alternative approaches and structuring recommendations so as to allow the Secretary flexibility in designing cost-effective actions needed to address Board recommendations. The Board does not use a cost-benefit analysis formula.

The Board's consideration of technical and economic feasibility is guided by the substantial legislative record surrounding the development and approval of the Board's enabling act by Congress. The principal sponsor of the Board's enabling act in the late 1980s was Senator John Glenn of Ohio, then Chairman of the Senate Committee on Governmental Affairs. Senator Glenn introduced S. 1085, the "Nuclear Protections and Safety Act of 1987," in April of 1987. The Committee on Governmental Affairs reported on the bill on September 24, 1987, in Senate Report 100-173 which addressed the subject of "technical and economic feasibility," quoted in full below:

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[1] This provision was recently amended by the National Defense Authorization Act for Fiscal Year 2013 to read: "In making its recommendations, the Board shall consider, *and specifically assess risk (whenever sufficient data exists)*, the technical and economic feasibility of implementing the recommended measures" (emphasis added).

[I]n making its recommendations, the Board is directed to consider technical and economic feasibility. This is not a cost-benefit analysis formula. The Board's recommendations to substantially reduce the likelihood that events will occur at any DOE nuclear facilities should not be restricted by cost. Technical feasibility requires that the Board's recommendation be capable of implementation using generally accepted scientific and engineering principles. Addressing economic feasibility means that in seeking to reduce risks, the Board should compare the costs of alternative approaches so as to structure any recommendation in an economic manner. For example, the Board may determine that it will cost five hundred million dollars ($500,000,000) to reduce substantially the likelihood of a nuclear event at a twenty-year-old DOE production reactor, which has an expected useful life of twenty-three to twenty-five years and a replacement value of one billion dollars ($1,000,000,000). Under those circumstances, the Board could indicate what technical and engineering improvements would be needed to repair the existing facility so that it could achieve acceptable standards for continued operation, but recommend closing such an old facility and accelerating the planning and construction of a new, replacement facility as a more economic use of federal dollars.[2]

Fifth, subsection (g)(6)(A) directs the Board in making recommendations to consider technical and economic feasibility. This standard does not require the Board to make formal findings concerning economic or technical feasibility. It is further recognized that the Board's recommendations will never be subject to scientific or economic certainties or be without controversy. Inevitably there will be instances where the Secretary believes the Board has not properly evaluated the data and reached correct conclusions concerning the safety of DOE's facilities. In those instances where the Secretary believes the Board's recommendation addresses a non-existent or extremely remote technical possibility, and implementing the changes will be extremely burdensome, the Secretary may disagree with the Board utilizing subsections (h)(1)(A) and (h)(2)(B)(i). The burden of demonstrating that a recommendation is not technically or economically feasible rests with the Secretary. If the Secretary disagrees with the Board's recommendation on these grounds, subsection (h)(2)(B)(i) requires the Secretary to report the disagreement to Congress and the President, along with the reasons for the Secretary's decision.[3]

S. 1085 was referred to the Senate Committee on Armed Services, then chaired by Senator Sam Nunn of Georgia. This committee reported on the bill on November 20, 1987. While the committee recommended a number of changes to the bill, it did not modify the "technical and economic feasibility" requirement for Board recommendations. The committee offered the following comment:

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[2] S. REP. NO. 100-173, at 28-29 (1987).
[3] *Id.* at 30.

> [I]n making its recommendations, the Board is directed to consider technical and economic feasibility. Technical feasibility requires that the Board's recommendations be capable of implementation using generally accepted scientific and engineering principles. Economic feasibility means that the Board may compare the cost of alternative approaches and structure its recommendations so as to reflect cost comparisons. The Board may compare the costs of alternative approaches to achieving adequate protection of public health and safety. The Board may consider such factors as the remaining useful life of facilities, schedules and plans for replacing them, and means to mitigate disruptions to ongoing operations that may result from recommended safety improvements, and other considerations.[4]

The Board has followed the guidance provided by the Senate committees during the ensuing 23 years and 57 formal recommendations.

The following three general principles can be extracted from the committee reports:

- The requirement to consider technical and economic feasibility "is not a cost-benefit formula."[5]
- The Board is not required "to make formal findings concerning economic or technical feasibility."[6]
- "The burden of demonstrating that a recommendation is not technically or economically feasible rests with the Secretary."[7]

The first of these principles is a direct consequence of the enabling act requirement that the Board determine a recommendation is "necessary to ensure adequate protection of public health and safety."[8] Hence, recommendations are not to concern safety above and beyond the Atomic Energy Act standard, but rather should look to achieving that standard of adequate protection. The courts have held that, unless required by statute, cost may not be weighed against measures needed to meet the statutory standard.[9]

The second and third principles are interrelated. The language of the statute directs the Board to "consider" technical and economic feasibility, yet Congress was aware that the Board would ultimately have to defer to the Secretary on application of these criteria. This is so because the Secretary is assigned the task of evaluating the Board's recommendations before drafting and providing to the Board an implementation plan. Part of this task involves deciding

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[4] S. REP. NO. 100-232, at 26 (1987).
[5] *supra* note 1.
[6] S. REP. NO. 100-173, at 28-29 (1987).
[7] *Id.*
[8] *Id.* at 5-7 (discussing the "adequate protection" standard to be used by the Board).
[9] *See* Union of Concerned Scientists v. U.S. Nuclear Regulatory Comm'n, 880 F.2d 552 (D.C. Cir. 1989); Union of Concerned Scientists v. U.S. Nuclear Regulatory Comm'n, 824 F.2d 108 (D.C. Cir. 1987), *reh'g en banc den.* 859 F.2d 237.

the best means to implement the safety objectives set forth in the recommendation. It therefore follows that the ultimate burden of deciding on technical and economic feasibility properly rests with the Secretary.

III. Development of a Recommendation

Before moving to a discussion of the two separate criteria, it is important to explain how the Board decides to issue a recommendation. Prior to the preparation of a recommendation, the Board and its staff will have evaluated the safety implications as well as technical and regulatory issues of concern. This evaluation is comprised of many activities: Board Member and staff visits to affected sites; briefings to the Board by DOE and its contractors; exchanges of formal correspondence; staff-to-staff meetings; reports to the Board submitted under a reporting requirement; and, in some cases, public hearings. By the time a recommendation is considered, DOE will be fully aware of the Board's concerns and will have provided much of the information relied on by the Board to formulate its position. None of the Board's 57 recommendations have been issued without this level of review and analysis.

The Board applies its deep understanding of DOE's nuclear facilities, underlying technologies, programs, standards, and procedures to avoid recommending measures that simply cannot be implemented. The Board has always been pragmatic in its review of alternative means and methods proposed by DOE to meet the intent of a recommendation. In the great majority of cases, DOE has been able to develop an implementation plan suitable to address the safety problems of concern to the Board. However, disagreements have arisen over priorities, risks, and safety criteria. These disagreements were expected by Congress: "Inevitably there will be instances where the Secretary believes the Board has not properly evaluated the data and reached correct conclusions concerning the safety of DOE's facilities."[10] All regulatory and oversight systems involve tension over complex problems. The Board believes that the best approach to satisfying Congressional intent is to be extremely thorough in exploring safety concerns prior to considering whether a recommendation to the Secretary is needed.

IV. Technical Feasibility

Both Senate reports include the same criterion for technical feasibility: is the recommended measure "capable of implementation using generally accepted scientific and engineering principles"?[11] This criterion would apply principally in cases where the Board recommends that DOE take specific physical actions such as installing new equipment, upgrading a safety system, engaging in a test program, and the like, as opposed to setting out a desired result without specifying means. Of its recommendations issued to date, 10 fall into this category.[12] In its other 47 recommendations, the Board is recommending that DOE address

[10] S. REP. NO. 100-173, at 28-29 (1987).
[11] *supra* note 1; *id.* at 30.
[12] Recommendations 90-1, 90-3, 90-7, 93-5, 95-1, 2000-1, 2004-2, 2010-2, 2012-1, 2012-2.

concerns in its safety framework, including safety management programs dealing with fire protection, quality assurance, confinement ventilation, packaging, and administrative controls.

Assurance of technical feasibility of recommended measures is provided by three factors. First, the Board Members themselves are legally required to be recognized experts in the field of nuclear safety and thus trained in physics, chemistry, nuclear engineering, and mathematics. Second, the Board has recruited and maintains a technical staff holding advanced degrees in nearly every technical discipline applicable to defense nuclear facilities. Outside experts are regularly engaged (as authorized by the Board's enabling legislation) whenever specialized knowledge is required. Third, the corporate knowledge represented by the Board Members and its staff extends into every field of nuclear science and engineering, from theory through to implementation, including construction, operations, and project management. Taken together, these factors enable the Board to assure that prior to issuing a recommendation, the technical measures necessary to address the recommendation are readily available should DOE choose to implement them. Specific examples of recent recommendations are included in Section VI below.

Additional assurance is provided by the fact that the Secretary has not responded to any Board recommendation by arguing that the measures requested by the Board are "technically infeasible." This record gives the Board confidence that it has faithfully followed the guidance of Congress to recommend measures "capable of implementation using generally accepted scientific and engineering principles."

V. Economic Feasibility

Congressional guidance on this criterion can be summarized in these three points:

- The burden of demonstrating that a recommended measure "will be extremely burdensome" to implement rests with the Secretary.[13]
- The Board may compare the cost of alternative approaches and structure its recommendations so as to reflect cost comparisons.
- The Board may consider such factors as the remaining useful life of facilities, schedules and plans for replacing them, and means to mitigate disruptions to ongoing operations that may result from recommended safety improvements, and other considerations.

The reason for the first of these has already been noted: only DOE can estimate with any accuracy the precise cost of implementing Board recommendations. In most recommendations the Board identifies a safety concern and safety objectives, but leaves up to the Secretary what specific actions will be taken. Moreover, the Board lacks the resources, expertise, and information base on which to make financial estimates.

[13] S. REP. NO. 100-173, at 28-29 (1987).

In formulating the specifics of its recommendations and evaluating implementation plans, the Board does take into account such factors as "the remaining useful life of facilities, schedules and plans for replacing them, and means to mitigate disruptions to ongoing operations that may result from recommended safety improvements,"[14] and other considerations. Sometimes, the Board considers safety issues in an old DOE facility that may not be replaced for some years, if ever.[15] A recent example is the Board's consideration of newly-discovered seismic deficiencies which led to Recommendation 2009-2, *Los Alamos National Laboratory Plutonium Facility Seismic Safety.* [16]

> Near-term actions and compensatory measures to reduce significantly the consequences of seismically induced events will likely involve operating the facility with restrictions on material-at-risk, removing inventory from susceptible locations or storing material in robust containers, and reducing the likelihood of a fire following a seismic event by identifying and implementing appropriate safety measures. Consistent with the Board 's Recommendation 2004-2, *Active Confinement Systems*, one long-term strategy that could provide effective mitigation for seismic events involves upgrading the facility's confinement ventilation system to meet seismic performance category 3 criteria. This strategy would allow the confinement ventilation system to reduce reliably the consequences of a seismically induced event by many orders of magnitude to acceptably low values.

When NNSA learned of a significant increase in the estimated ground motion that the Los Alamos Plutonium Facility could experience during an earthquake, the Board carefully considered the subsequent dose consequence to the public following such an event. The Board then purposely crafted Recommendation 2009-2 so as to give the Secretary maximum latitude to choose the most effective remedies. A wide range of economically-feasible remedies were considered by the Board, including reduction of material-at-risk (MAR), changes in facility operations, and facility replacement. Recommendation 2009-2 identified the severity and urgency of the situation and called for an acceptable safety strategy involving both immediate and long term actions to reduce this risk. As noted above, the Board recommended that installation of an active confinement ventilation system be considered as part of an effective long-term strategy for risk-reduction. In short, the Board identified the risk to the public, and further

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[14] *Budget Request for Department of Energy Atomic Energy Defense Activities and Department of Defense Nuclear Forces Program: Hearing Before the Subcomm. on Strategic Forces of the H. Comm. on Armed Services*, 112th Cong. 5-6 (2011) (statement of Dr. Peter S. Winokur, Chairman, Defense Nuclear Facilities Safety Board).

[15] Congress expected this situation to occur: "Under those circumstances, the Board could indicate what technical and engineering improvements would be needed to repair the existing facility so that it could achieve acceptable standards for continued operation, but recommend closing such an old facility and accelerating the planning and construction of a new, replacement facility as a more economic use of federal dollars." S. Rep. No. 100-173, at 28-29 (1987).

[16] Issued October 26, 2009.

identified a wide range of economically-feasible remedies, then left it to the Secretary to select the specific remedial measures and timetable for implementation.

VI. Application of Principles to Recent Recommendations

In 2012 the Board issued two recommendations, both dealing with highly technical problems at defense nuclear facilities. On May 9, 2012, the Board transmitted Recommendation 2012-1, *Savannah River Site Building 235-F Safety*, to the Secretary of Energy. This recommendation dealt with removing plutonium-238 (Pu-238) contamination from an inactive facility. Recommendation 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*, sent to the Secretary on September 28, 2012, addressed a serious safety problem at the Hanford Tank Farms. In both cases, the Board was fully informed as to the nature of the safety problem and recommended technically and economically feasible measures that should resolve the issues in a reasonable period of time.

Recommendation 2012-1

Building 235-F at the Savannah River Site no longer has a programmatic mission. It is operated in a surveillance and maintenance mode, is normally unoccupied, and houses several partially deactivated processing lines. With the exception of residual contamination, Building 235-F has been de-inventoried of special nuclear material. This residual contamination constitutes the principal hazard and includes a significant quantity of Pu-238. Pu-238 in this facility is in the form of highly dispersible, fine powder. This form increases the potential dose consequences associated with a release.

The Board first identified the need to remove Pu-238 from Building 235-F in a 2003 letter to the Secretary of Energy: "In particular, Building 235-F was anticipated to be shut down in the near future, but now is planned to be used for long-term storage and related operations...the risk from several hazards ha[s] been accepted rather than eliminated (e.g., combustible inactive cables in KAMS and ... plutonium-238 contamination in Building 235-F)."[17] Later in 2003, the Board filed a special report requested by Congress. The Board stated in regard to this same facility:

> DOE should carry out its plan to remove and characterize plutonium materials currently stored in 235-F. DOE should not plan extended storage of plutonium in 235-F until it has completed implementing the proposals in this report. It may be preferable from safety, cost, and mission perspectives to pursue storage elsewhere at SRS. Options include an enhanced KAMS facility, a new storage facility, or an expanded PDCF.[18]

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[17] Letter from John T. Conway, Chairman, Defense Nuclear Facilities Safety Board, to the Hon. E. Spencer Abraham, Secretary, U.S. Dep't of Energy (June 12, 2003). This letter was based on several years of work by the Board's technical staff in the form of onsite inspections of Building 235-F and review of DOE's documentation of the building's radioactive inventory.

[18] DEFENSE NUCLEAR FACILITIES SAFETY BOARD, STUDY OF FACILITIES FOR STORAGE OF PLUTONIUM AND PLUTONIUM MATERIALS AT SAVANNAH RIVER SITE 2-5 (2003).

The Board reiterated this concern in a second report to Congress in 2005. In that report, the Board stated:

> The Board notes that DOE-SR intends to continue making some structural and equipment upgrades to 235-F. DOE-SR considers these upgrades necessary to provide confinement of plutonium-238 holdup in old processing cells should there be a significant earthquake. The presence of extensive plutonium-238 holdup is one of the most significant hazards in 235-F. The Board believes the first priority for DOE-SR should be to decontaminate the process cells to eliminate this hazard. Any structural or equipment improvements would be warranted only if the effort to decontaminate the plutonium-238 holdup were protracted. The Board will continue to follow this issue in the course of its normal safety oversight for the site.[19]

On a number of occasions from 2005 to 2012, DOE evaluated options and developed plans to remove Pu-238 residual contamination from this facility. However, because these efforts never moved beyond the planning stage, the Board found it necessary to recommend that the Secretary take action to reduce the radiological hazard of this deteriorating facility. By 2012, the Board and its staff had been involved in the technical issues presented for more than a decade. During that period, the Board had the opportunity to review DOE's own plans for Pu-238 decontamination, plans that were never put into effect. The Board became increasingly concerned that ventilation and fire protection systems were continuing to degrade. In addition, the construction of the MOX facility in recent years had placed many additional workers at risk.

Recommendation 2012-1 thus identified the need for DOE to take near-term actions to more effectively prevent a major fire in Building 235-F and to take action to remove and/or immobilize the residual contamination within Building 235-F because of the potential dose consequences to collocated workers and the public.

As regards to technical feasibility, the Board recommended near-term actions to reduce the fire hazards in Building 235-F from combustibles and electrical ignition sources. The Board pointed to a September 2011 walkdown of Building 235-F by Board staff that specifically identified a significant quantity of transient and fixed combustibles and unnecessary, non-air gapped electrical equipment. Remedial measures clearly involved generally accepted practices. The recommendation further addressed hazards associated with residual contamination. The Board understood that immobilization and/or removal of the hazardous material involved standard engineering practices.

As regards economic feasibility, the Board considered DOE's previous evaluations and plans to immobilize and/or remove residual Pu-238 contamination. The Board further understood that as an alternative to immobilization/removal of residual contamination,

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[19] DEFENSE NUCLEAR FACILITIES SAFETY BOARD, STUDY OF FACILITIES FOR STORAGE OF PLUTONIUM AND PLUTONIUM MATERIALS AT SAVANNAH RIVER SITE 2-4 (2005).

physical upgrades to fire and ventilation safety systems could also have resulted in adequate protection. However, given the lack of facility mission and remaining life, and the likelihood that immobilization/removal would ultimately be necessary, physical upgrades (other than early warning smoke and fire alarms) were understood to be economically inefficient. Accordingly, Recommendation 2012-1 advised the Secretary to take immediate, low cost actions such as removal of combustibles, de-energization and air-gapping of electrical ignition sources, evaluation of early detection alarm systems, and upgrades to the emergency response plan. The Secretary was further advised to immobilize or remove residual contamination as a long-term measure by whatever method the Secretary found to be most efficient and effective.

On July 10, 2012, the Secretary of Energy accepted the recommendation. In his acceptance letter, the Secretary stated:

> DOE agrees with the Board that action must be taken to reduce the hazards associated with the material at risk that remains as residual contamination within Building 235-F. The Board acknowledged in its letter that DOE has taken action to de-inventory Building 235-F of special nuclear material. DOE has also taken action to remove the transient combustible material within Building 235-F and to limit access. In developing an Implementation Plan, DOE will address all sub-recommendations with the ultimate goal of reducing, to the extent feasible, the radiological hazards from residual contamination and the fire hazards due to excessive combustible materials and electrical ignition sources . . . We look forward to working with the Board as we work to reduce the hazards posed by Building 235-F.[20]

The Board is now reviewing DOE's implementation plan, submitted on December 5, 2012. The plan identifies no areas of the recommendation that, in DOE's view, are technically or economically infeasible.

Recommendation 2012-2

In this recommendation, the Board requested that DOE take a number of specific actions to reduce the accident threat posed by flammable gases in storage tanks at the Hanford Tank Farms. The ventilation systems for the double-shell tanks (DST's) in the Tank Farms are important in preventing and mitigating potential accidents involving the flammable gases generated by the high-level wastes stored in these tanks. The Tank Farms safety analysis shows that many of the tanks contain sufficient quantities of gas trapped in the waste such that flammability limits could be exceeded if the gases were spontaneously released, which is possible under both normal operating and accident conditions. Furthermore, all the double-shell tanks contain wastes that continuously generate flammable gases and would eventually create a flammable atmosphere in the tank without adequate ventilation. Consequently, ventilating the double-shell tanks will prevent hydrogen explosions in the vessel headspace.

[20] Letter from the Hon. Steven Chu, Secretary, U.S. Dep't of Energy, to Dr. Peter S. Winokur, Chairman, Defense Nuclear Facilities Safety Board (July 10, 2012).

Tank ventilation has been the preferred safety strategy to adequately protect collocated workers and the public for most of the past two decades.

In 2010, DOE approved downgrading the functional classification of the ventilation systems from safety-significant to general service. In lieu of a credited engineered feature, DOE implemented an administrative control to monitor flammable gas conditions in the tanks. However, the Board identified a number of weaknesses with the administrative control, including the need to effectively measure flow rates in the ventilation system. The weaknesses collectively rendered the control inadequate to perform the specified safety function. The Board further noted that other engineered systems providing indications used in determining whether operators need to take corrective action were not classified as safety significant and would not be qualified or maintained by DOE in accordance with their safety function. The Board documented its concerns in a letter to DOE on August 5, 2010.

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As regards to technical feasibility, the Board considered the nature and severity of the flammable gas hazards in the Hanford DSTs, the reliability of DOE's chosen safety strategy, and DOE's applicable safety requirements. The Board's recommendation considered that active confinement ventilation is the most effective engineering solution used to prevent the build-up of flammable gases in radioactive waste storage vessels. The technical feasibility of the recommendation was self-evident in that the ventilation systems already existed and had been previously credited and relied upon to perform this vital safety function at the Tank Farms.

As regards to the economic feasibility, the Board specifically recommended that DOE use a graded approach and "... determine the necessary attributes of an adequate active ventilation system that can deliver the required flow rates within the time frame necessary to prevent and mitigate the site-specific flammable gas hazards at the Hanford Tank Farms." In this regard, the Board was sensitive to the costs of recommending extensive upgrades to the existing system. The Board's recommendation recognized that the primary considerations involved reliable flow monitoring and assurance of the prescribed flow rates. Consequently, the Board recommended installing safety related flow monitoring in the tank farm ventilation system and restoring safety related maintenance and testing requirements to the installed active ventilation systems to assure that the required flow rates were met.

The Secretary accepted Recommendation 2012-2 in these terms:

> In developing an Implementation Plan (IP), DOE will take the pragmatic and graded approach detailed below to address the sub recommendations that will significantly improve the robustness of flammable gas controls in the near term. DOE is confident

this is the most expeditious approach to implement a more robust safety control for Double Shell Tank (DST) ventilation monitoring consistent with the intent of Recommendation 2012-2.

* * * *

DOE is committed to the safe operation of its nuclear facilities consistent with the principles of Integrated Safety Management and the Department's nuclear safety requirements. DOE values the Board's input on how the Department can improve its activities. We look forward to working with the Board and its staff on preparing DOE's IP for Recommendation 2012-2.[21]

From these statements it appears that DOE is confident the recommendation can be implemented using a "pragmatic and graded approach" that will fully satisfy the Board's safety objectives. The plan identifies no areas of the recommendation that, in DOE's view, are technically or economically infeasible.

VII. Conclusion

Over a period of some 23 years, the Board has endeavored to follow the guidance provided by Congress in applying the statutory requirement to consider "technical and economic feasibility." Proof that the Board has succeeded rests in the fact the Secretary has accepted every Board recommendation in whole or in part; partial acceptances have not been based on failure to meet the technical and economic feasibility criteria. The Board will continue in every case to pragmatically search for technically sound and economically feasible solutions to safety concerns at defense nuclear facilities, while being mindful of the ultimate requirement that adequate protection be provided to the public.

[21] Letter from the Hon. Steven Chu, Secretary, U.S. Dep't of Energy, to Dr. Peter S. Winokur, Chairman, Defense Nuclear Facilities Safety Board (Jan. 7, 2013).

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

April 1, 2013

The Honorable Ronald L. Wyden
United States Senate
221 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Wyden:

In response to your request dated March 22, 2013, the Defense Nuclear Facilities Safety Board (Board) would like to present our perspective on the state of nuclear safety at the Hanford Site. The Board has observed firsthand the challenges facing the Department of Energy (DOE) at Hanford as it strives to eliminate the hazards posed by its high-level radioactive waste. Resolution of these significant challenges will require continued focus by both DOE and the Board over the next several years.

During the past 3 years, the Board has issued three Recommendations to the Secretary of Energy, held three public hearings (October 2010, March 2012, and May 2012), and written numerous letters describing the Board's concerns related to nuclear safety at the Hanford Site. In response to your request dated March 22, 2013, the information provided below summarizes the Board's perspective on (1) safety concerns associated with the Hanford Tank Farms, (2) unresolved technical issues related to the design of the Waste Treatment and Immobilization Plant (WTP), and (3) the current state of Hanford's safety culture.

Safety Concerns Associated with the Hanford Tank Farms

DOE stores more than 50 million gallons of high-level radioactive waste in 177 underground tanks at the Hanford Site. Many of the old single-shell tanks have been known to leak. As a result, DOE transferred most of the liquid waste in those tanks to newer double-shell tanks. The Board has been following DOE's plans for dealing with leaking tanks, and the impact these tanks have on the DOE's overall waste retrieval, treatment, and disposition strategy. In August 2012, DOE discovered that double-shell tank AY-102 was leaking and more recently DOE announced that single-shell tanks are continuing to leak. This situation reinforces the need to retrieve and treat the tank waste and be vigilant in maintenance and safe operations in the Hanford Tank Farms for the foreseeable future. The Board believes that prolonged storage of waste in the Hanford Tank Farms represents a potential threat to public health and safety.

Eliminating the risk of high-level waste (HLW) release to the environment requires waste retrieval and treatment. The very nature of the waste makes establishment of viable retrieval and treatment systems extremely challenging because some of the waste has "sludge-like" consistency and some also contains relatively large plutonium particles. Accurate characterization of tank waste is necessary to meet the waste acceptance criteria of WTP and to operate the facility safely. However, the development of accurate waste characterization

methods faces formidable technical challenges. Formidable technical challenges also remain in the development of safe waste mobilization and transfer systems.

In addition to tank leakage, another issue with the current Tank Farms concerns a possible deflagration event caused by hydrogen gas generation within a tank. Such an event could spread radioactive waste in the Tanks Farms. On September 28, 2012, the Board transmitted Recommendation 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*, to the Secretary of Energy. This Recommendation identified concerns with DOE's administrative controls for monitoring flammable gas conditions in its double-shell waste tanks and recommended that DOE restore the functional classification of the ventilation systems in these tanks from general service to safety-significant. DOE's safety analyses show many of the double-shell tanks currently have enough flammable gas retained in the waste that, if released in the tank headspace, could create a flammable atmosphere. Furthermore, all the double-shell tanks contain waste that continuously generates some flammable gas. This gas will eventually reach flammable conditions if adequate ventilation is not provided. Consequently, ventilating the double-shell tanks is critical to the safety posture of the Hanford Tank Farms. DOE has accepted this Recommendation and is currently developing an implementation plan.

In an April 26, 2011, letter sent to DOE's Assistant Secretary for Environmental Management, the Board identified weaknesses in the underground waste transfer system used at the Hanford Tank Farms. For example, the Board's letter noted deficiencies in the methodology for extending the service life of temporary "hose-in-hose" waste transfer lines located in trenches and the process for certifying the waste transfer system can perform its safety function. DOE has taken actions to address these issues, including (1) implementation of a Fitness for Service Program that addresses some of the performance and maintenance issues of the waste transfer system and (2) developing a test plan for studying the aging of the hose-in-hose lines and other common polymer components. As the frequency of waste transfers increases, these issues could require additional management attention.

Technical Issues Concerning the Design of WTP

DOE is in the process of transitioning the WTP project from a design-construction phase to a construct-operate phase. However, DOE has not resolved key technical issues with the WTP design, many of which were identified several years ago. These technical issues must be resolved to support completing the design and construction of the Pretreatment Facility (PTF) and, to a lesser extent, the HLW facility. Key technical challenges associated with the PTF include operations associated with pulse-jet mixing, strategies for hydrogen in pipes and ancillary vessels, and erosion/corrosion of pipes and vessels. The resolution of these safety issues is complicated by the partial construction of the PTF and the use of a "black-cell" design concept that may not allow for maintenance over the 40-year life of the plant.

DOE is considering alternate strategies to bypass the PTF, which includes directly feeding the WTP vitrification facilities from Tank Farms. These strategies are in the conceptual phase. The Board will evaluate these alternate strategies to identify any safety issues when engineering and safety strategy information is available. The Board believes that directly feeding waste into the WTP vitrification facilities will be a challenging undertaking that will

involve resolving some of the same technical and safety issues associated with the design of the PTF and the HLW facility. For example, DOE will be required to partially re-design the existing facilities to receive wastes directly from Tank Farms, develop new processes to "precondition" the waste, duplicate process operations that are currently housed in the PTF, and resolve technical issues associated with feed delivery and development of waste acceptance criteria.

The Board has identified a number of safety-related risks with the WTP, including many that were identified in the design of WTP. A summary of these safety-related issues are listed below. The first listed issue, *Mixing in Process Vessels*, was considered by the Board to be of such significance as to warrant a recommendation to the Secretary. The remaining concerns presented advice, analysis and concerns to the Secretary, but did not warrant a recommendation and are listed here in reverse chronological order. The summary is based on information from the Board's Report to Congress on the Status of Significant Unresolved Issues with DOE's Design and Construction Projects, the most recent of which is dated December 24, 2012.

Mixing in Process Vessels—On December 17, 2010, the Board transmitted Recommendation 2010-2, *Pulse Jet Mixing at the Waste Treatment and Immobilization Plant*, to the Secretary of Energy. This Recommendation identified concerns that inadequate performance of mixing systems at WTP could lead to nuclear criticality accidents, explosions of flammable gases, and mechanical failures of process vessel components. DOE has informed the Board that resolution of these issues is delayed because a key technical assumption underlying DOE's implementation plan was not supported by test data. The Secretary is developing a revised implementation plan.

Formation of Sliding Beds in Process Pipes—In an August 8, 2012, letter sent to DOE's Senior Advisor for Environmental Management, the Board expressed concerns that the current design of the WTP slurry pipeline system is susceptible to frequent formation of sliding beds of solids on the bottom of the pipe. The sliding bed of solids could increase wear from erosion/corrosion and could increase the likelihood of pipeline plugging. Prolonged operation of a centrifugal pump with a plugged process line can cause the pump to fail catastrophically potentially resulting in the loss of primary confinement, and damage to adjacent structures, systems, and components. The Board also observed that DOE has not yet incorporated new information on waste properties into the design of the slurry transport system.

Design and Construction of Electrical Distribution System—In an April 13, 2012, letter sent to DOE's Senior Advisor for Environmental Management, the Board identified several issues with the operability and safety of the electrical distribution system for WTP. DOE has developed a plan to address these issues.

Erosion and Corrosion of Piping, Vessels, and Pulse Jet Mixer Nozzles—In a January 20, 2012, letter sent to DOE's Senior Advisor for Environmental Management, the Board communicated its concern that design information for WTP does not provide confidence that wear allowances are adequate to ensure that piping, vessels, and components located in black cells are capable of performing their safety functions over the 40-year design life of the facility. DOE is developing a plan to address the erosion and corrosion issues.

Ammonia Control—In a September 13, 2011, letter to DOE's Acting Assistant Secretary for Environmental Management, the Board expressed concern that the existing design and safety-related controls associated with the storage and potential release of large quantities of ammonia at the WTP site did not adequately protect workers or facilities at WTP. DOE stated that the project team would perform three new hazard analyses to address the Board's concerns. The Board will evaluate the hazard analyses and supporting calculations as they are developed.

Heat Transfer Analysis for Process Vessels—In an August 3, 2011, letter sent to DOE's Acting Assistant Secretary for Environmental Management, the Board identified technical issues with the heat transfer calculations used to establish post-accident hydrogen mixing requirements necessary to prevent explosions in PTF process vessels at WTP. DOE plans to revise these calculations.

Spray Leak Analysis—In an April 5, 2011, letter sent to DOE's Assistant Secretary for Environmental Management, the Board identified technical issues with DOE's model for estimating radiological consequences to the public from spray leak accidents in the PTF and HLW facilities of WTP. DOE subsequently completed a spray leak-testing program at Pacific Northwest National Laboratory, which similarly concluded the spray leak model is non-conservative. DOE is planning additional testing to resolve this issue.

Hydrogen in Piping and Ancillary Vessels—Beginning with the April 15, 2010, *Quarterly Report to Congress on the Status of Significant Unresolved Issues with the Department of Energy's Design and Construction Projects*, the Board expressed concern with DOE's 2010 change in its safety strategy for hydrogen hazards in pipes and ancillary vessels[1]. Flammable gases, such as hydrogen, generated by the wastes treated in WTP will accumulate whenever flow is interrupted in process piping, and in regions of the piping system that do not experience flow, such as piping dead legs. DOE has approved a strategy that allows hydrogen explosions in piping under certain conditions, and relies on a Quantitative Risk Analysis (QRA) and other complex models to predict the magnitude of the explosions and the response of the piping system. The Board remains concerned that DOE has not yet developed a QRA that demonstrates that explosions would not lead to a breach of the primary confinement in process piping and vessels.

Hanford's Safety Culture

The Board's evaluation of the technical issues at WTP discussed above was broadened in the summer of 2010 to include an investigation into the project's safety culture after the Board received a letter from Dr. Walter Tamosaitis, a former engineering manager for the project's contractor. In his letter, Dr. Tamosaitis alleged that he was removed from the project because he identified technical issues that could affect safety. He further alleged that there was a flawed safety culture at the project. The Board's investigation concluded that a flawed safety culture at WTP was inhibiting the identification and resolution of technical and safety issues.

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[1] *Conditional Approval of Safety Requirements Document (SRD) Change Adding Hydrogen in Piping and Ancillary Vessels (HPAV) Design Criteria for Pretreatment (PT) Facility*, 10-NSD-013, February 15, 2010

As a result, on June 9, 2011, the Board transmitted Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*, to the Secretary of Energy. This Recommendation highlighted the need for DOE to expeditiously make major improvements in the safety culture at WTP. Subsequently, DOE's Office of Health, Safety and Security independently reviewed the safety culture at WTP and issued a report in January 2012 that confirmed the Board's conclusions. In its public hearing on March 22, 2012, the Board concluded that the flawed safety culture within DOE's field and contractor organizations was inhibiting the ability to (1) identify and address long-standing technical issues and (2) resolve conflicts between the engineering and nuclear safety to ensure safety controls were integrated into the facility design as required by DOE's *Nuclear Safety Management Rule*, Title 10, Code of Federal Regulations, Part 830.

DOE has taken several significant actions to address the safety culture issues identified in the Board's Recommendation. These include clarifying roles and responsibilities in the federal field and Headquarter organizations; strengthening the Differing Professional Opinion and Employees Concerns processes; validating the basis for the project's nuclear safety strategy; and increasing DOE's Senior leadership involvement in technical challenges.

On December 5, 2011, Secretary Chu and Deputy Secretary Poneman issued a memorandum to the heads of all DOE elements describing expectations for nuclear safety in the Department. The memorandum addressed roles and responsibilities, safety culture, standards and directives, and Integrated Safety Management. The Secretary and Deputy Secretary clearly stated their commitment "to a strong and sustained safety culture, where all employees—from workers with shovels in the ground to their managers all the way up to the Secretary and everyone in between—are energetically pursuing the safe performance of work, encouraging a questioning work environment, and making sure that executing the mission safely is not just a policy statement but a value shared by all." The Board believes that Secretary Chu has vigorously tackled this issue, but progress in changing any organizational culture is historically slow. Fundamental differences between WTP engineering and nuclear safety must still be resolved. DOE has committed to conducting a review of the WTP safety culture within the next few months to evaluate the effectiveness of its corrective actions. The Board looks forward to the results of this review.

If you would like additional information regarding any of these issues, I would welcome the opportunity to discuss them further at your earliest convenience.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman