



**TESTIMONY**  
**OF**  
**JOHN W.**  
**CRAWFORD,**  
**JR.**

**DEFENSE**  
**NUCLEAR**  
**FACILITIES**  
**SAFETY BOARD**

**S. 167**

**HEARING ON**  
**THE DEPARTMENT OF ENERGY ABOLISHMENT ACT**  
**SENATE ENERGY AND NATURAL RESOURCES COMMITTEE**

**UNITED STATES SENATE**

**SEPTEMBER 4, 1996**

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MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I am John W. Crawford, Jr. CAPT., USN (Retired) and Board Member, Defense Nuclear Facilities Safety Board (Board). My background can be briefly summarized as including some 37 years in developing and applying nuclear technology. About 30 of those were spent on assignments in the Department of Energy (DOE) or its predecessor agencies. This service was divided about equally between civilian reactors and naval reactors. In the former, I was Principal Deputy Assistant Secretary for Nuclear Energy and in the latter I was Deputy Manager under Admiral Rickover. In addition, I served three years as the assistant to Commissioner Thomas E. Murray of the Atomic Energy Commission (AEC), where much of my effort was spent on issues concerning the nuclear weapons program. During the last seven years, I have been providing independent external safety oversight of the DOE defense nuclear facilities.

I would point out that the views expressed are my own and should not be construed as those of the

other Board Members.

The proposed legislation addresses three matters on which I should like to comment: the transfer of the functions of the Defense Nuclear Facilities Safety Board to the Department of Defense (DoD), the transfer of certain defense-related programs away from DOE to DoD, and the abolishment of DOE.

The first, of course, presumes that certain defense-related functions are to be transferred from DOE to DoD. Were this to happen, I believe it would nevertheless be ill-advised to also transfer the functions of the Board to DoD. It was a key objective of Congress in creating the Board to establish an agency external to DOE and, thus, an agency in an independent position to be constructively critical in evaluating safety at DOE's defense nuclear facilities. I believe that the Board has been responsible for effecting many improvements in DOE's performance. Its ability to do so is attributable mainly to two factors: (1) the effective use of a technically highly-qualified staff directed by technically-qualified Board Members, and (2) the fact of the Board being part of the Executive Office of the President and outside DOE. The safety problems associated with the defense nuclear facilities that led Congress to establish the Board would neither be eliminated nor substantially changed with simply a transfer of responsibilities to the DoD. To place the Board within DoD would destroy its independence and its effectiveness.

As you will appreciate, providing competent technical oversight, focused on the complex public and worker health and safety issues affecting the widespread DOE nuclear weapons complex, requires a significant number of personnel with many technical skills. The political, social, and economic issues surrounding the operation of DOE's production, testing, and clean-up programs further complicate the planning and operation of the Board's oversight program.

It has been suggested by some that the Board's health and safety oversight has focused too much attention on DOE's inability to correct long standing problems with its management of the nuclear weapons program. In fact, we are just realizing the progress which Congress chartered us to make. Recent action in the House of Representatives, whereby the Board's appropriation for FY 1997 would be reduced from the requested \$17 million to \$12 million, a 30 percent reduction, would, if it became law, effectively cripple the Board's oversight effort at this critical time in the Board's existence. While I can certainly understand that the Board's technical competence and probing assessments have made many in the DOE and its contractor community uncomfortable, eviscerating the Board's capability would seriously impact the assurance of public and worker health and safety. It is my hope that the Senate's version, which fully funds the Board's activities, prevails in conference committee.

The second issue is whether DOE's national security functions, including defense, nonproliferation, and defense-related environmental management programs should be transferred to DoD. I will comment only on DOE's defense nuclear facilities. It seems to me that Congress made a very wise decision in the Atomic Energy Act of 1946 by separating between two agencies the functions of developing and producing nuclear weapons on the one hand and preparing for their delivery and possible use on the other. This basic arrangement of separation, with appropriate adjustments, has been retained down to the present and has served the nation well. I know from personal experience, including that as an assistant to an AEC commissioner, how highly-important to the nuclear weapons program that separation has been. Long-continued participation in the AEC-Navy

nuclear propulsion program also impressed me, time and time again, with the high importance of the separation of functions between these agencies. I know of no consideration that would make it prudent to alter the basic two-agency arrangement for defense nuclear facilities at this point.

As to the third issue, one ought to have carefully analyzed all the many functions of DOE and the effectiveness with which they have been carried out before making a recommendation on abolishing DOE. My duties as a Board Member have not provided the opportunity to make such a comprehensive analysis. However, having been responsible, with other Board members, for external safety oversight of DOE's defense nuclear facilities, I am in a position to comment on DOE's performance in that area.

DOE presently does not have a strong safety management program for its defense nuclear facilities. The principle reason for this is the lack of sufficient numbers of technically-qualified government managers and technical support personnel and a management style that does not validate contractor performance.(1) In its Annual Reports, the Board has repeatedly informed Congress of this significant personnel deficiency and characterized it as the most important safety problem at these facilities. Believing that appropriate improvements were not being made by DOE, I issued a comprehensive report(2) last March on the problem. The report was sent, on my own initiative, to the appropriate committees of Congress, the Secretary, and other Administration officials; it was also made available to the public. I should like to submit a copy of this report for the record.

I would like to emphasize that Congress was already aware of this DOE personnel problem when it established the Board. In fact, the Senate Conference Report that accompanied the Board's enabling legislation stated:

"The Board is expected to raise the level of technical expertise in DOE substantially."

This problem had also been brought to the attention of DOE management repeatedly in various independent studies of DOE performance.(3)

Notwithstanding its serious nature, however, I do not believe that, in itself, the problem described warrants a conclusion at this time that DOE should be abolished. The reason is that, since the report was issued, Mr. Thomas Grumbly, the new Under Secretary, has taken a firm, personal grip on the problem, has acknowledged that it exists, and has begun structuring a multifaceted program of corrective action.

Moreover, I know from personal involvement within DOE that corrective actions like those Mr. Grumbly envisages can be made to work. In the late 1960s, the AEC had a similar technical personnel problem in its then seriously ailing reactor development program. However, with strong Congressional urging and support, the problem was fixed. The principle ingredients of the solution were personal involvement by the very top levels of management and sheer will power, unremittingly applied. Mr. Grumbly appears determined to apply it. The Board will give him all the support that is possible. Congressional support will also be imperative.

What I have observed, moreover, about the involvement of DoD personnel assigned to the DOE nuclear weapons program is not necessarily conducive to supporting transfer of defense nuclear facilities from DOE to DoD. For example, in my report, referred to above, I cited "... uncertainty

about DoD involvement within DOE's nuclear weapons program ..." as one of the "... major impediments to solving the [DOE] problem." Specifically, I wrote of the apparent dilution in recent years in the qualifications of military officers assigned to DOE's nuclear weapons programs, especially when compared with their counterparts, with whose performance I was familiar, in the earlier years. My limited investigation into this subject has lead me to believe that one reason for such an apparent dilution has been that the nuclear weapons speciality among military officers has either ceased to exist or is regarded as "not career-enhancing."

However, while not in a position to recommend that the DOE be abolished as an agency, I am nevertheless convinced that management arrangements for those activities of the defense nuclear program, which are currently assigned to the Assistant Secretary for Defense Programs (DP), can be restructured to be more effective.

Those in DOE who manage the nuclear weapons program must be endowed with the highest order of professional competence, technically and managerially, which it is possible to assemble for the effort. This is only a matter of straightforward common sense; one does not have to be a nuclear weapons expert to understand why. It is necessary only to be aware of the potential destructive power of such nuclear weapons and of the inevitable fallibility of men in coping with technology. There have been too many disasters of technology—Titanic, Hindenburg, Thresher, Three Mile Island, Challenger, and Chernobyl—to be satisfied with anything less than the very best technical management that can be assembled.

The capabilities of those DOE personnel responsible for its nuclear weapons program safety, taken in their entirety, do not presently meet this necessarily high standard. Also, it is essential to distinguish between the competence of DOE personnel and those in laboratory and contractor organizations in the nuclear weapons program. My comments are directed only at the former. DOE itself must have an overall high level of technical competence to be able to confirm that its laboratories and contractors are performing in a fully effective way. It is DOE's responsibility to make those judgements, especially in matters affecting public health and safety as they relate to nuclear weapons. In such matters, there is no substitute—none—for constructive, informed technical dialogue between a highly-competent government customer and highly-competent laboratories and contractors in meeting mutually agreed upon safety standards and operational requirements. At this time, the DOE does not have sufficient numbers of personnel with adequate technical and other qualifications to recognize deficiencies in practice and to insist upon correction in all essential areas and activities and, thus, to meet its safety responsibilities.

There may be those who doubt or question the assertion that DOE personnel are not fully equipped to carry out their responsibilities. If so, let them examine the many formal Recommendations made to DOE by the Board over the last seven years that have drawn attention to specific weaknesses in the management and operation of defense nuclear facilities; let them examine the scores of letters that also call attention to safety deficiencies in the nuclear weapons program. From such an examination, the inevitable conclusion will be that management of the DOE nuclear weapons program has simply not been able to consistently measure up to its safety responsibilities.

How has this situation come about? In my view it has resulted, to a degree, from a progressive weakening of the strong leadership that carefully selected military personnel had provided to the DOE nuclear weapons program. This could be a somewhat natural result of a perceived decrease

in the interest in, or importance of, nuclear weapons in the post-Cold War world. From a safety perspective this must be guarded against. As originally established in the AEC, the nuclear weapons program was required by statute to be managed by a general officer, who reported to the Commissioners through the General Manager. The interactions between this military head of the program and the Commissioners were direct, close, and frequent. Based on personal observation, it was clear to me that the general leading the Division of Military Application was held directly responsible by the Commissioners for managing the nuclear weapons program.

The officers who headed the Division of Military Application in its early years were highly-accomplished members of the Army's Corp of Engineers, all with outstanding academic credentials, graduate degrees in engineering, and extensive engineering experience. The average tour length in the assignment for the first five directors was four years. By strong contrast, during the almost seven years of the Board's existence it has interacted with four different incumbents.

During the years that have intervened, this organizational arrangement has changed and this close interaction at the very top level has weakened. Responsibility for the management of the nuclear weapons program is now assigned to the Assistant Secretary for Defense Programs. A general officer is assigned from the DoD to the top management structure of the Assistant Secretary. Nevertheless, this officer's responsibilities within that structure are far from being of such scope that he can be regarded as managing the nuclear weapons program and the complex that was built to support it; certainly not when compared with responsibilities of the former Director of Military Application.

Another potential contributing cause of weaknesses in the management of DOE's nuclear weapons program is the failure of DOE to take advantage of lessons it might have learned about management of nuclear safety from its most effective nuclear program; namely, the naval nuclear propulsion program, which DOE manages jointly with the Navy. I believe that the success of this joint DOE-Navy (known as Naval Reactors or "NR") can be attributed largely to its masterful personnel policies and proactive technical management. An appendix of my recent report was dedicated to discussing the selection, education, and training of personnel within the naval nuclear propulsion program, so I will not go into further detail here (I have appended a copy for your convenience(4)).

From the standpoint of technical management, NR develops and promulgates authoritative, detailed technical direction for execution of its program to the laboratories and government- and contractor-owned facilities that execute the actual nuclear work in the field. The nuclear weapons program would benefit from adopting a model that clearly defines the roles and responsibilities of all concerned in the program and ensures that assigned personnel are capable of performing them. This is an issue that the Board has addressed with DOE on a number of occasions, with little effect, to-date.

The above two attributes: a selection, education and training program that ensures a technically outstanding staff and technically challenging work combine to ensure the recruitment and retention of technically qualified personnel. These attributes are significantly enhanced by the joint nature of NR. A broad range of continuing education and training programs are available to the staff. Managers in NR can choose from a substantial reservoir of talent, both military and civilian, for positions from entry level through senior management.

The situation which I have described cannot be corrected by moderate measures; it calls instead for major rebuilding. The rebuilding effort must result in a management organization for the nuclear weapons complex that meets the following criteria:

- Its personnel must assume responsible ownership of the nuclear weapons complex, individually and collectively, as the present Under Secretary has recently advocated. Its personnel cannot take refuge in the belief that they can divest themselves of responsibility for nuclear safety by purporting to assign it to laboratories and/or contractors.
- Its distinguishing attribute, transcending all others, must be high levels of technical competence combined with managerial force and acumen.
- It must fully exercise its management authority—not simply set policy. It should issue authoritative technical direction through standards and guidelines for operation of defense nuclear facilities and also be actively engaged in ensuring that these policies, standards, and guidelines are implemented at the facilities.
- It must be established in a position of such stature, stability, and permanence that it can be an effective advocate of its own needs, both within the Administration and with Congress.

To meet this criteria, I would propose that a joint Nuclear Weapons Directorate be created. The head of the organization would report directly to the Secretary of Energy and also directly to the Secretary of Defense. The respective titles of the head would be Deputy Secretary of Energy for Nuclear Weapons Programs and Deputy Secretary of Defense for Nuclear Weapons Programs. Personnel from each department would be assigned in numbers appropriate to the functions the Directorate performs for each agency. But all would operate in a fully unified manner, irrespective of the agency from which assigned.

Making the transition from the present organizational arrangements to those proposed would entail many critical actions, the details of which need not be discussed here, except as you may desire. However, I have addressed some of them in an appendix(5) to this statement, which I should like to submit for the record. What I should prefer to emphasize here is the heart and soul of this recommendation; namely, technical and managerial acumen among the government personnel of this new agency, how it is to be achieved, and how it will be applied in the interest of safety. The first requirement is that the Director be highly-qualified both by education and experience in nuclear technology. They must be the embodiment of the technical competence standard of the organization. And this standard must be maintained by them, for the organization, against the plethora of forces that are always operating to erode it.

Other key considerations are the tenure and rank of the head of the agency. The Director should be a highly-experienced manager, a recognized expert in nuclear technology. The individual may be either a military officer or civilian, whoever is best qualified for the job. However, for the selection of the initial Director, I would see advantages in a military officer; my recommendation as regards rank and tenure would be for "four stars" and six to eight years. Here I would note that, by Executive Order, the Director of the joint DOE-DoD naval nuclear propulsion program has a tour length of eight years and the rank of admiral ("four stars," O-10). The principal need of the newly-constituted Directorate will be to attract and retain technically qualified personnel. An individual of "four star" rank will ordinarily know how to get action on such needs from among the several armed services, to a degree not matched by those of lesser rank. Every bit as important is the need for the

head of the Directorate to be endowed with complete authority to select, assign, and out place all personnel, both military and civilian, Headquarters and field, in this organization. Unless given wide-ranging authority in all personnel matters, he will be inhibited and hampered by all manners of administrative and other constraints which prevent achievement of the high level of competence necessary.

To be able to attract personnel of the high competence called for in the nuclear weapons program, an organization needs to be able to promise stability and a reputation for being effective. A joint Directorate under a highly-qualified leader, with substantial tenure and authority would provide both. It would also provide the kind of government organization with which the nuclear weapons program can provide assured protection of public and worker health and safety.

(1) See [Appendix A](#), *The Demanding Customer*.

(2)DNFSB/[TECH-10](#), *An Assessment Concerning Safety at Defense Nuclear Facilities: The DOE Technical Personnel Problem*, March 1996.

(3) See DNFSB [TECH-10](#) for a list of references.

(4)See [Appendix B](#), *Naval Reactors (NR): A Potential Model for Improved Personnel Management in the Department of Energy (DOE)*.

(5)See [Appendix C](#),*Plan for Joint DOE-DoD Nuclear Weapons Directorate*.