DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 14, 2004

The Honorable Spencer Abraham
Secretary of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Secretary Abraham:

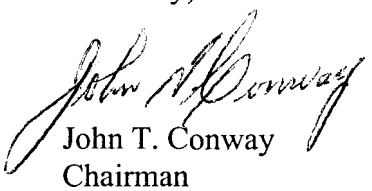
The Defense Nuclear Facilities Safety Board (Board) continues to view the Facility Representative (FR) Program as one of the Department of Energy's most effective and efficient approaches for assuring the safety of the full spectrum of hazardous activities. The Board's staff conducted reviews at the Pantex Site Office (PXSO), Sandia Site Office (SSO), and Los Alamos Site Office (LASO) to evaluate the training and staffing of FRs.

Observations by the Board's staff revealed that the FRs at these National Nuclear Security Administration (NNSA) sites are being trained on the facility-level safety requirements; however, they are not being adequately trained to understand all hazards that could impact safety controls for activities being conducted within their assigned facilities. This lack of activity-specific training limits the FRs' ability to recognize and identify safety issues associated with the conduct of these activities. For example, the Board's staff discovered during the W78 Readiness Assessment that the PXSO FRs were not required to have any weapon-specific training on the hazards and associated controls for the W78. It was explained that one factor limiting the ability to expand FR qualification and continuing training requirements is the limited number of FRs as compared with the number of nuclear weapons operations, facilities, and site-wide safety bases.

The number of FRs at PXSO has decreased from nine to six. The level of staffing of FRs at the NNSA sites is of particular concern to the Board. As a result, the FRs face significant challenges to their ability to monitor nuclear weapon activities and perform their other assigned duties, such as Duty Officer and member of Readiness Assessment teams. SSO and LASO have not met their FR staffing needs for the past 4 years, raising the question of how NNSA can be an effective, demanding customer for its two largest national laboratories. PXSO and LASO have requested two to three additional FR billets, but even these may not be sufficient to meet their needs.

The FR training and staffing deficiencies noted above may affect NNSA's ability to improve and maintain the safety of the hazardous activities conducted at the NNSA sites. Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a report within 60 days of receipt of this letter that reviews the extent of these issues at all NNSA sites and outlines the measures that will be taken to address these deficiencies. The enclosed report prepared by the Board's staff is forwarded for your information and use in initiating this review.

Sincerely,



John T. Conway
Chairman

c: The Honorable Kyle E. McSlarrow
The Honorable Linton Brooks
The Honorable David K. Garman
The Honorable Jessie Hill Roberson
Mr. Mark B. Whitaker, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

April 27, 2004

MEMORANDUM FOR: J. K. Fortenberry, Technical Director

COPIES: Board Members

FROM: J. DeLoach

SUBJECT: Review of Facility Representative Training and Staffing at Three National Nuclear Security Administration Sites

This report documents observations resulting from a review of Facility Representative (FR) training and staffing at the Pantex Site Office (PXSO), the Sandia Site Office (SSO), and the Los Alamos Site Office (LASO). This review was conducted by a member of the staff of the Defense Nuclear Facilities Safety Board (Board) J. DeLoach during March 22–24, 2004. The Board's staff was not able to review the FR program at the Kansas City Site Office (KCSO) as it has been disestablished. As part of each review, the staff also walked down several defense nuclear facilities at each of the sites with the cognizant FR.

Overview. The three National Nuclear Security Administration (NNSA) sites are not staffed with a sufficient number of FRs to perform their facility oversight responsibilities and participate in their additional assignments (e.g., Duty Officer, member of Readiness Assessment teams, training). SSO and LASO have also been underreporting their FR staffing needs for the past 4 years. Of note, the guidance on FR staffing analysis in DOE-STD-1063-2000, *Facility Representatives*, does not adequately account for all of the hazardous facilities for which the Department of Energy (DOE) and NNSA have oversight responsibility, and does not capture all of the FR work demands. The FR continuing training programs were unstructured, informal, and generally weak in execution. As of the time of this review, training on specific activities within a facility (e.g., weapons-specific hazards and associated controls at PXSO or hazardous research activities at LASO) was not required. Detailed observations are presented below.

FR Capacity for Growth. Because of the demonstrated value and success of the FRs, DOE and NNSA continue to invest heavily in the FR program. FRs have been recognized by senior DOE/NNSA managers not only for their extensive systems knowledge and field skills, but also for their managerial potential. Personnel with FR experience are often sought for demanding management positions involving operations and safety. The *DOE Facility Representative Program Performance Indicators Quarterly Report* of March 16, 2004, reports an overall attrition rate in 2003 of 20 percent (40 of 204 FRs). As described in the report, only 6 of the 40 FRs had left DOE, while 34 FRs had remained within the DOE complex through lateral transfer to another position at their site or other DOE/NNSA organization (26), transfer to another site to be an FR (5), or promotion to a higher grade (3).

FR Training. DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, and DOE Manual 231.1-2, *Occurrence Reporting and Processing of Operations Information*, specifically assign responsibility to the FR "for monitoring the performance of the facility and its operations." At the NNSA sites, it appears that FRs are trained and qualified primarily on the facility functions, but receive little or no training on the specific hazards and associated controls of the operations or activities performed within the facility. This lack of activity-specific training limits the FRs' ability to recognize and identify safety issues associated with the conduct of the nuclear weapons-specific or research-specific activities in their respective facilities. The NNSA sites have relied to a limited extent on their FR continuing training programs to provide some training in this area. However, the continuing training programs at the three NNSA sites reviewed were unstructured, informal, and generally weak in execution. FR attendance at key continuing training courses (e.g., the course on significant changes to the Occurrence Reporting and Processing System in 2003) was not accurately tracked or enforced at any of the three sites.

During the W78 Readiness Assessment conducted in January 2004 at the Pantex Plant, the Board's staff discovered that the cognizant FR had not received and was not required to have any weapons-specific training that would provide an understanding of the unique weapon-related hazards and associated controls for the upcoming weapon operation. As a result, PXSO modified its FR continuing training instruction to require FRs to read the weapon-specific Hazard Analysis Report and Technical Safety Requirements; observe tooling training; and, if funding is available, attend the weapons training at Los Alamos National Laboratory (LANL). This is a good first step, but implementation will be a challenge because of the limited number of FRs at PXSO. These added training requirements will also challenge the FRs' ability to perform their primary functions. Conversely, the press of their duties will hinder their ability to read and digest weapons-specific safety documentation in a self-study mode. Additionally, PXSO acknowledged that limited funding will hinder FR attendance at the LANL training. Of note, this training is applicable only to LANL-designed weapon systems. Similar training on Lawrence Livermore National Laboratory's weapon systems apparently does not exist. Furthermore, there is no linkage or plan to determine which FR needs which training. Also, managers are relying on their FRs to identify the right course and find the time to take it.

FR Staffing at PXSO, SSO, and LASO. PXSO has 6 FRs since the transfer of 1 FR to LASO. In last year's Managed Staffing Plan, NNSA claimed that 6 FRs were sufficient at the Pantex Plant, justifying this statement primarily by proposing changes in oversight coverage of hazardous activities. Since 1999, NNSA's staffing analyses, using the guidance in DOE-STD-1063-2000, *Facility Representatives*, have consistently shown a need for 14.5 FRs at PXSO. Their normal responsibilities include monitoring nuclear weapons activities in 214 nuclear facilities (bays, cells, buildings, and nuclear material storage magazines) or observing other industrial activities in 150 moderate- to low-hazard facilities under the BWXT Pantex contract.

The PXSO FRs will also participate in eight readiness reviews in 2004 (duration of 2–4 weeks each for one or two FRs), are scheduled to conduct 12 site assessments (duration of 1 week each for every FR) this year, and will serve regularly in rotating assignment as Duty Officer. The FRs will also observe maintenance activities during the swing shift on a monthly basis, devote time to training and requalification (five FRs are due to requalify in 2005), and use several weeks of leave for vacation and medical reasons. Given these responsibilities, cumulative time demands, and overall workloads, it is clear that PXSO does not have a sufficient number of FRs. PXSO recently sent a request to the NNSA Administrator for three additional FR positions that, if approved, would increase PXSO's total to nine. However, even this increase may not be enough to satisfy the current and future workload of the FRs. This shortage will continue to impact the ability of FRs to spend the majority of their time in their assigned facilities, observing and assessing activities to ensure their safe operation.

SSO is responsible for more than 800 facilities, approximately 400 of which are classified as hazardous facilities. These facilities are located in five states (New Mexico, Texas, Nevada, California, and Hawaii), where a wide variety of hazardous operations, mostly non-nuclear, are performed under the Sandia National Laboratories (SNL) contract (valued at $2.02 billion for fiscal year 2004). Among the hazardous facilities are five nuclear facilities in Technical Area-V (two Hazard Category 2 research reactors, two Hazard Category 3 hot cell facilities, and one Hazard Category 3 irradiation facility) and another four Hazard Category 3 nuclear material storage facilities at Manzano.

SSO currently has 8 FRs, 5 of whom are qualified. One qualified FR is assigned to the nuclear facilities, while another is in the process of qualifying, with a scheduled completion date of March 2005. One qualified FR is charged with monitoring the SNL facilities and activities of approximately 1,000 contractor personnel in Livermore, California, but he also serves as an SSO site manager for these remote SNL facilities. The FR staffing analyses recorded in the DOE *Facility Representative Program Performance Indicators Quarterly Reports* for the past 3 years have reported a need for 12 FRs at SSO. It appears that SSO has been underreporting its FR staffing needs since calendar year 2000. Earlier FR staffing analyses from 1997 and 1999 showed that SSO needed approximately 21–22 FRs to carry out required oversight responsibilities.

LASO has 16 authorized FRs positions, of which 13 are filled. Of these 13, 10 FRs are fully qualified, and 2 others are previously qualified FRs from other sites. LASO has vacancy announcements posted for 3 FR positions, and has also submitted a request to the NNSA Administrator for 2 more FR positions. In the past, LASO has reported a need for 19 FRs, but a staffing analysis from 2001 suggests a more sophisticated approach to determining staffing needs that incorporates realistic workload activities and takes into account historical turnover rates of qualified FRs. The 2001 analysis showed that 24 FR positions were needed to maintain coverage of LASO hazardous facilities, crediting 19 qualified FRs while allowing time for other FR candidates to qualify (qualification time for an FR candidate is usually 9–18 months, depending on the experience level of the individual). With the turnover of a qualified FR

occurring roughly every 3–4 years as a result of lateral transfers, promotions, or departures, there is a measurable impact on the availability of qualified FRs at LASO. This detailed analysis methodology could be applied as well at other NNSA sites.

The LASO staffing analysis will need to be reperformed because of an increase in the number of LASO facilities identified as nuclear during efforts to develop the new or revised Documented Safety Analyses required by 10 Code of Federal Regulations (CFR) 830, *Nuclear Safety Rule*. Since last reported in the Board's letter of October 10, 2001, LASO has identified 17 Hazard Category 2 nuclear facilities (an increase of 5), 9 Hazard Category 3 nuclear facilities (an increase of 6), and 41 radiological facilities. (The 11 additional facilities are inactive environmental facilities.) With an additional 350 moderate- to low-hazard facilities under LASO's oversight, the FRs are continually challenged to find time to observe the multitude of activities tasked under the Los Alamos contract (valued at $1.98 billion for fiscal year 2004). For example, it was reported that Technical Area-18, the Los Alamos Critical Experiments Facility, had no FR coverage since December 2003.

Staffing Analysis Guidance in DOE-STD-1063-2000. The guidance for determining the coverage and staffing requirements for FRs at a site set forth in DOE-STD-1063-2000 does not adequately account for all of the hazardous facilities in which DOE/NNSA have oversight responsibility. The guidance addresses Hazard Category 1, 2, and 3 nuclear facilities, but does not address nuclear facilities below Hazard Category 3 (i.e., radiological facilities). Additionally, the guidance does not clearly capture other hazardous non-nuclear facilities under DOE/NNSA purview, such as those facilities handling high explosives, chemicals, or biological agents. DOE directives (i.e., DOE Order 5480.19 and DOE Manual 231.1-2) require specific FR actions at all DOE facilities where hazardous or industrial operations are conducted. Therefore, sufficient FR staffing levels are needed to ensure the safe operation of these hazardous non-nuclear facilities, especially if they are collocated with defense nuclear facilities and could impact nuclear operations or consume necessary resources needed for adequate coverage of a site's defense nuclear facilities. Finally, the standard fails to consider all of the responsibilities, time demands, workload, and turnover rates affecting all FRs, as discussed above. Misapplication of the staffing analysis guidance in DOE-STD-1063-2000 has contributed, among other things, to allowing KCSO to discontinue its FR program and PXSO to drastically reduce coverage of its non-nuclear hazardous facilities.

Follow-up discussions with the FR Program Manager indicate that revisions to the guidance to address the issues raised above will be considered during the upcoming update to DOE-STD-1063-2000. The Board's staff further notes that a similarly rigorous approach is also needed in the staffing analyses used to determine other federal technical staffing needs at each of the sites within the defense nuclear complex. The Board's staff has discussed with the Federal Technical Capabilities Panel the need to upgrade its technical staffing analysis methodology to meet this higher level of rigor.