

**Statement**

**By**

**The Honorable Joseph F. Bader**

**Member**

**Defense Nuclear Facilities Safety Board**

**Presented**

**at the**

**Department of Energy's  
14<sup>th</sup> Annual Facility Representative Workshop**

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Good morning. It is good to be here now for the third year in a row to address the Facility Representative Workshop. I continue to be impressed with many of the Facility Representatives that I and other Board Members see around the Department of Energy/National Nuclear Security Administration (DOE/NNSA) Complex, though there are increasing areas that need attention by you and senior management...these concerns I will address in my talk today. But first, I would once again like to extend my compliments to Mark Whitaker, Joanne Lorence, James Heffner, and their team for coordinating this workshop and providing an opportunity to share your experiences from the field.

Now let me give a sincere congratulations to the 2007 Facility Representative of the Year, Robert (Bob) Seal from the Idaho Operations Office. This is an honor and superb recognition among your peers of your outstanding accomplishments out in the field! Well done! I saw Bob in action out in Idaho in the Materials and Fuels Complex during one of my recent trips. Elizabeth (Beth) Sellers, the Idaho Operations Office Manager, must be very proud of having three consecutive winners of the Facility Representative of the Year.

During the past year, we have gained two new Board Members - Mr. Larry Brown and Dr. Peter Winokur. Mr. Brown served 33 years in the Navy and recently worked in the Office of Nuclear Energy at DOE. Dr. Winokur worked extensively in the science and technology of radiation effects at Sandia National Laboratories. Both gentlemen have been visiting the sites, touring the facilities, and, in most cases, talking to or observing the work of the Facility Representatives.

Some of the comments I will be making today are based on our collective observations during the last year.

We all know that the quality of the Facility Representative program and the effectiveness of the Facility Representatives are directly related to the quality of the qualification program where technical rigor and senior management involvement are key factors. It is important to ensure technical rigor of the qualification program is driven by a multi-pronged approach that involves the following features:

- (1) mentoring of newer Facility Representatives by senior Facility Representatives to show them how to observe work activities, conduct reviews, ask questions, research issues, find answers, and to effectively document and communicate their issues;
- (2) making full qualification a primary objective early on, as opposed to immediately being absorbed into day-to-day duties;
- (3) providing focused instruction on implementation of Documented Safety Analysis (DSA) controls; (a major focus of a Facility Representative should be ensuring that configuration changes and operational changes are properly analyzed for their impacts on the facility DSA);
- (4) taking technical courses and pursuing an advanced technical degree to improve technical rigor and skills; and
- (5) taking opportunities for cross-training at other facilities.

Senior management involvement is achieved: (1) when site managers and senior technical managers are directly involved in qualification checkouts and oral boards; (2) when these senior managers consistently participate with the Facility Representative in walkthroughs of facilities; (3) when Facility Representatives periodically and consistently brief senior managers and site managers on their findings and concerns; and (4) when senior managers hold federal and contractor personnel accountable for addressing Facility Representative findings and concerns.

About three years ago, the Board wrote a letter that highlighted areas that warranted strengthening in the Facility Representative Program. The Board was primarily concerned with a better evaluation of Facility Representative staffing levels at the sites, and continuing training for Facility Representatives that addressed changing facility or activity conditions. Since the issuance of the Board's letter, DOE addressed the bulk of the Board's concerns and also revised the Facility Representative Program Standard. Now, DOE and NNSA managers need to implement the standard effectively at the sites. One area that still needs senior management attention is the resourceful recruiting and aggressive hiring needed to fill vacant Facility Representative positions. If one looks at the slide, you will see a table that breaks the data down by program sites to show the staffing analyses needs for Facility Representative positions, the number of positions filled, and the percentage of Facility Representative fully qualified in their assigned facilities.

HQ Offices & Sites	Staffing Analysis	# Onboard	% Fully Qualified
Environmental Mgt	103	102	79
Nuclear Energy	13	12	92
Science	18	18	83
NNSA	70*	62**	55

\* Los Alamos Site Office reduced their Facility Representative staffing needs from 19 to 11.

\*\* Upon graduation of first class of NNSA Future Leaders, 7 Facility Representative positions will be filled by the end of this summer for a total of 69 of 70 positions filled.

There are sufficient statistics on attrition of Facility Representatives from promotions, transfers, and retirements, that would support the establishment of backup billets and a pipeline for Facility Representative-in-Training. Facility Representatives-in-training in these backup billets would be used to quickly fill vacated Facility Representatives positions.

Once the Facility Representatives are on board, it is then up to the senior managers to provide the necessary hands-on leadership to get them qualified and into the field to observe hazardous operations. The DOE goal is having 80% fully qualified Facility Representatives at a site. As noted in this slide, four NNSA sites significantly lag behind in the number of fully qualified Facility Representatives. This is not an acceptable situation and the Board is focusing more attention on this area.

NNSA Site Office	# Onboard	# Fully Qualified
Livermore	10	3 (30%)
Los Alamos	9	3 (33%)
Nevada	11	5 (45%)
Sandia	11	5 (45%)

As a matter of explanation, you will note that Livermore Site Office (LSO ) has only three fully qualified Facility Representatives. We found out that LSO would have seven fully qualified Facility Representatives but five have exceeded the three-year requalification period, and four of the five have exceeded the three-year requalification period plus the six-month grace period...hence, the number of three fully qualified Facility Representative. This situation indicates a lack of management attention.

The Board has already commented on strengthening federal safety oversight at LASO in its February 1, 2007 letter to NNSA: “There are critical unfilled technical management and staff positions within LASO (such as the Technical Deputy Manager, Senior Technical Advisor, Facility Representatives, and safety analysts), and existing LASO management and staff have not received adequate levels of training and qualification for their new assignments under the oversight pilot. NNSA needs to fill vacancies in much-needed technical positions expeditiously, develop the necessary qualifications, and ensure that resources are adequate to train the workforce properly.”

At Livermore, we understand that the Office of Environment, Safety and Health Evaluations (HS-64) conducted a review of the Livermore Site Office (LSO) that included the Facility Representatives. Problems with their training and qualification program, operational awareness, and technical content and rigor on assessments were identified during this review, as well as in a previously conducted self-assessment. While corrective actions are underway at Livermore, the Board believes the effectiveness of the Facility Representatives at this site needs significant

improvement. We think that LSO management must set higher expectations for Facility Representatives and then hold all Facility Representatives accountable to meet those expectations. We also expect senior management to use the Facility Representatives more effectively.

The effectiveness of the Facility Representative programs at these NNSA sites remains in serious question. The qualification of Facility Representatives at the four NNSA sites is not adequate and will require concentrated attention and resources by NNSA senior management to expedite their qualifications. Until that time, the low qualification status directly impacts NNSA's ability to execute its federal safety oversight responsibilities, while its programs present significant new challenges. The high number of unqualified NNSA Facility Representatives will be further compounded this summer by the addition of the seven personnel graduating from the NNSA Future Leaders program. I would comment that in addition to the situation at NNSA, the EM Facility Representatives at the Savannah River Operations Office are not being used effectively by management, and the Operations Office senior management needs to address this situation.

Historically, the main and preferred source of Facility Representatives have been seasoned, technical personnel from within DOE and from relevant external sources, such as Navy nuclear trained personnel, NRC inspectors, or naval shipyard personnel who have the "right stuff"...meaning that they are technically capable, experienced, technically inquisitive, and persistent. My other mantra that fits in this situation is: "Be polite, but be persistent." Last year, I said that the DOE Technical Intern programs, such as the NNSA Future Leaders Program, could

be a source of candidates, if, and this was a big IF, they received the proper training, education, mentorship, AND experience. I emphasize “experience” especially for high hazard nuclear operations because of the complexities of the processes and the serious consequences of a potential accident. The Board, including myself, will watch the progress of this class with particular attention to their effectiveness through our Site Representatives.

We are concerned about how continuing training is being executed at the various sites. It can readily be conducted by subject matter experts who are members of the site staff or from other sites, or by other Facility Representatives. It does not and should not depend on contractor funded training programs. There is no better way to have a deeper understanding of the material than when you try to teach it to others. Take advantage of the vast amount of experience in Federal employees to share your knowledge with each other. It doesn't have to be elaborate, but it must be effective.

For two years running, I have discussed my thoughts on why facility design and construction projects, including substantial modifications, need the experience of a seasoned operations person on the Federal Integrated Project Team (IPT). Experience gained by a Facility Representative is unique in DOE and prepares you to bring knowledge of operations and maintenance to the development of newly designed facilities. My points have been consistent with a couple of the Safety Design Guiding Principles being articulated in the draft DOE Standard 1189 on *Integration of Safety Into the Design Process*. Those principles are, “The project team must include appropriate expertise and be established early in the project cycle,” and



“Safety personnel must be used from the onset of project planning to help ensure that appropriate hazards and techniques for hazard management are considered (e.g., material-at-risk limitations, prevention techniques, and operationally effective design solutions).” The goal here is to inject operational safety experience into the design process early. Failure to incorporate safety and operational considerations early in the design process can result in expensive changes later in the design process or severely impact the safe operation of the facility.

I am not proposing that Facility Representatives already assigned to another facility be pulled off to join an IPT during the design phase...quite the contrary...I am proposing that an operations person who has been a previously qualified and seasoned Facility Representative AND who has received additional training in design and construction techniques, be added to the team. That said, not all Facility Representatives (or former Facility Representatives) have the necessary skills, experience, and specific training to provide valuable input into all design projects.

Personnel chosen for such an undertaking must be selectively picked. Also, if a former Facility Representative is to be a full member of the IPT, it would be beneficial for that individual to have another skill set such as mechanical, electrical, civil/structural, or process engineering, in addition to operational experience. Later during the construction phase, a dedicated Facility Representative WILL be needed to observe on-site construction efforts, including acceptance testing of equipment.

So let me walk through each phase of a design and construction project and illustrate how a seasoned operations person, someone with previous Facility Representative qualifications, can contribute to an IPT during each phase.

First, in the Mission Needs Phase, an operationally-seasoned IPT member could provide a level of understanding and insight into the types and limitations of operations and processes in existing facilities, with helpful lessons learned or operating experience information, that would guide the IPT in framing the mission needs package and safety design strategy.

During the Conceptual Design Phase and into the Preliminary Design Phase, the design is constantly evolving as more detailed information becomes available and the hazard analyses become more refined. Thirty to forty percent of the design activity is completed by the end of the Preliminary Design Phase. So, useful operating experience information and pertinent lessons learned again help the IPT members in developing and selecting alternative approaches to various aspects of the design to meet the nuclear design requirements and minimize the safety risks and hazards. Providing thoughtful strategies for hazard elimination/prevention, and waste stream reduction, should also be an important role of this IPT member. If those hazards can't be eliminated, then viable engineered controls for these hazards should be recommended during these phases of the design.

During the Final Design Phase, final design reviews will be required, along with reviews of the preliminary documented safety analysis, and facility and system design descriptions, to ensure

that operational safety considerations are adequately captured. During these many reviews, the operationally-seasoned IPT member would play an important role in assessing if the as-designed facility will perform as intended. For example, the safety analyses must encompass the scope of the design and demonstrate that the designated Safety Structures, Systems and Components (SSCs) are designed to reliably perform their intended safety and operational functions. The skills needed to effectively review this document are commonly practiced by Facility Representatives, so their participation would be expected to provide considerable value.

During the Construction Phase, it will fall to personnel such as DOE Facility Representatives to perform as part of the “demanding owner” function of DOE in establishing quality nuclear construction, by insisting that the quality requirements, procedures and practices are maintained; that the facility is being built according to the approved final design specifications; and that the engineered safety controls are built and function as required to meet the Technical Safety Requirements. Another major part of the Construction Phase will be observing and validating the adequacy of the field acceptance testing of equipment and processes. Check with Kerry Schierman, a Hanford Facility Representative...he used his naval shipyard nuclear testing experience during the major modifications to K-Basin. The development and installation of the K-Basin fuel retrieval system included first-of-its-kind equipment. [This system was designed to transfer spent fuel from wet-storage open containers into dry-storage sealed containers for disposal in the geological repository.] Kerry participated in the development and review of the procedures required to operate this equipment and then observed the successful testing and initial operation of this system.

Lastly during the Start of Operations Phase, the Facility Representative is intimately involved in procedure walkdowns and verifications, emergency response drills, operator training, etc., all in preparation for the Operational Readiness Review.

As I mentioned last year and will repeat for this audience again, DOE needs to factor into its staffing analysis the need for additional dedicated Facility Representatives to support planning, design and construction phases of new facilities. DOE also needs to better define the Facility Representatives' roles and specific training needs in the latter phases of design and construction, for such areas as building codes, construction practices, design of reinforced concrete structures, common industrial hazards applicable to nuclear construction, project management, nuclear QA standards, welding, and startup/acceptance testing of equipment. For some training needs, you may need to be creative in finding the right, experienced subject matter expert to teach particular aspects of nuclear facility construction.

Facility projects such as the Waste Treatment Plant at Hanford or the Highly Enriched Uranium Materials Facility at Y-12, serve as good case studies to review in helping to determine the role, staffing, and training needs for Facility Representatives in reviewing design deliverables to ensure that operational safety requirements are addressed and in overseeing construction of new facilities. Talk to Jerry Lipsky at Y-12. Jerry was the 2002 Facility Representative of the Year at Los Alamos Site Office, and is now a Y-12 Facility Representative fully engaged as a member of the Y-12 Site Office HEUMF Project Core Team . Also talk to John Eschenberg at ORP. John was the 2000 Facility Representative of the Year from Savannah River Operations Office, and is

now the Federal Project Manager for the Waste Treatment and Mobilization Plant. As the department undertakes an increasing number of large, complex nuclear construction projects, there is an increasing need for operationally-seasoned personnel on IPTs, such as Jerry and John, to ensure that these new facilities are designed and rigorously constructed with the requisite safety and quality.

The Board continues to be impressed with the Facility Representative community as a whole and the contributions you are making to keep the DOE sites safe. Your challenge is to continue to strive for excellence and improve your technical capability in all the lifecycle phases of your facilities. With the myriad of unique and hazardous work activities in the Complex, we strongly advise each of you to pursue advanced technical degrees and professional certifications to keep on the cutting edge of your job and the DOE mission. The Board will continue to support and encourage DOE to strive for excellence in the Facility Representative Program. Keep up the great work. Thank you.