

Kieling, John, NMENV

From: Sheri Kotowski [serit@cybermesa.com]
Sent: Friday, May 07, 2010 12:21 PM
To: Kieling, John, NMENV
Cc: Joni Arends; Yesca Sullivan; Marian Naranjo
Subject: Comments on NMED draft Hazardous Waste permit for LANL

Attachments: sir_20071016_la.pdf; Fire Protection Deficiencies at Los Alamos National Lab Report Summary[8].pdf



sir_20071016_la.pdf (566 KB)
Fire Protection Deficiencies a...

John E. Kieling, Program Manager
Hazardous Waste Bureau - New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
E-mail: john.kieling@state.nm.us

May 7, 2010

Dear Mr. Kieling,

On behalf of the members of the Embudo Valley Environmental Monitoring Group (EVEMG) and all those residing downwind and down stream from the Los Alamos National Laboratory (LANL) that are concerned with ongoing public health and safety issues generated by nuclear weapons production in the past, present and future at LANL, EVEMG offers the following comments on the New Mexico Environment Department draft Hazardous Waste Permit for Los Alamos National Laboratory.

EVEMG is a non-governmental organization that formed in 2003 to address community concerns about the risks generated by the Cerro Grande Fire. As downwind neighbors to Los Alamos National Laboratory (LANL), EVEMG focuses on air emissions generated by LANL activities and their relationship to public and environmental health and safety. Located throughout the Embudo watershed are traditional landbased communities that are both culturally and economically dependent on a watershed that is free of contamination. Many families throughout our watershed area depend on small, family farms and kitchen gardens for both income and sustenance. We view healthy air, land and water as critical in providing local stability and security.

EVEMG has been involved in issues of Emergency Management, Preparedness and Response (EMP&R) for over half of a decade. Beginning in 2002, one and a half years after the Cerro Grande Fire of 2000 we have been on a path of studying, investigating, questioning and educating and informing our communities and government agencies about EMP&R at LANL and the actions and lessons learned from this devastating event. In November 2004 EVEMG and the Community Radiation Monitoring Group co-sponsored the Emergency Management and Preparedness Forum in Dixon, New Mexico. Over 100 people participated in the forum, which consisted of presentations by federal, state, county and local emergency managers and responders and tribal and local leadership about what they learned from the fire and what they have done to improve on their preparedness.

This is what we learned through the forum:

- * Agencies were no more prepared for an emergency at LANL after the fire than before the fire
- * Lessons learned were not being addressed at any governmental level
- * Local leadership and community members were very concerned, angry and had very little trust around EM&R in the event any kind of accident at LANL

This was the outcome of the forum:



- * NMED, EVEMG and CCNS began working together with our communities and agencies putting together a regional Homeland Security emergency exercise to evaluate the capacity of all local, state and federal in response to an emergency at LANL
- * Increased community education interest and involvement in safety issues at LANL
- * Increased inter agency involvement in issues of EM&R

Please submit as public comments the following comments on the July 6, 2009 draft NMED, LANL Hazardous Waste Permit hearing.

1. EVEMG supports the New Mexico Environment Department (NMED) in denying the Open Burn Application for LANL. EVEMG objects to the open air burning of hazardous waste. EVEMG fully supports the alternative of a Confined Burn Facility in order to facilitate eliminating the reactive component of High Explosives. We see this as an invaluable tool that can be used over the term of the permit to reduce the footprint at LANL.

2. As part of Restorative Justice to communities impacted by 65 years of LANL operations, EVEMG supports a Physical Information Repository to be located in an institute of higher learning in the Española Valley.

3. While EVEMG supports the language of the Emergency Preparedness and Management and the Contingency Plan in the draft permit, we have little faith that LANL is capable of carrying out the terms of the permit. This comment is based on many reports some that are attached to our comments that provide substantial on-going evidence that LANL cannot meet the requirements of emergency management and preparedness set forth in the permit. The culmination of reports is provided in the document The Fire Protection Deficiencies at Los Alamos National Laboratory, which you will find attached to this email.

Further, attached are two recent letters dated October 16 2007 and December 8,, 2008 letter from the Defense Nuclear Safety Facility Board (DNFSB) that identify on-going problems with LANL's fire protection, staffing shortages, funding shortfalls, implementation of the Baseline Needs Assessment and achievement of fire and emergency response capabilities and 'overall lack of progress with respect to safety improvements at LANL² (10-16-07).

We understand that the DNFSB deals with LANL as a nuclear facility, however LANL's hazardous waste operations are in many cases intricately tied to nuclear operations. Some hazardous waste storage units are located inside of buildings with plutonium operations and in the case of Area G and TA-54 there are operations that include a radioactive component. These reports also serve to accentuate the broader implication of a systemic problem with the entire facility, which in the eyes of the public makes it far more serious.

In the interest of protecting surrounding communities from the consequences of inadequate emergency preparedness and fire protection by ongoing operations and units covered under the proposed permit, EVEMG recommends that hazardous operations be suspended and that the requested permit be denied until deficiencies are fully and completely addressed to satisfy what our communities see as homeland security. Homeland security to land-based communities means protecting the air, land and water from the consequences of an accident at LANL.

Respectfully submitted on May 7, 2010 by

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A.J. Eggenberger, Chairman
John E. Mansfield, Vice Chairman
Joseph F. Bader
Larry W. Brown
Peter S. Winokur

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700 Washington, D.C. 20004-2901
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October 16, 2007

The Honorable Thomas P. D'Agostino
Administrator
National Nuclear Security Administration
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0701

Dear Mr. D'Agostino:

The Defense Nuclear Facilities Safety Board (Board) continues to be concerned about the safety of nuclear operations at Los Alamos National Laboratory (LANL). Many of the Board's concerns were raised in a public meeting held in Los Alamos, New Mexico, on March 22, 2006, and were reiterated in a letter to the National Nuclear Security Administration (NNSA) dated February 1, 2007. In particular, the Board encouraged NNSA to improve safety bases and ensure the efficacy of safety systems with a "focus on rapidly increasing confidence in these safety systems, particularly safety-class systems."

The Board has become increasingly concerned in the overall lack of progress with respect to safety improvements at LANL. The Board notes that laboratory management has developed a set of multiyear improvement initiatives in an attempt to provide long-term solutions to these significant and persistent safety issues. One initiative is the Safety Basis Improvement Plan which is designed to provide high-quality safety bases that meet current requirements for all nuclear facilities. The Formality of Operations initiative is an effort intended to strengthen and standardize practices relative to conduct of operations, engineering, maintenance, and training. Additionally, limited initial actions are being taken to address significant engineering resource shortfalls highlighted in a recent laboratory staffing analysis. These efforts appear to be positive and mutually reinforcing. However, none of these initiatives are mature, and continued federal and contractor management attention and support are needed to ensure their success. These initiatives will take multiple years to drive tangible improvements at the floor level. The Board remains convinced that NNSA should focus on rapidly improving credited safety systems.

This conviction is supported by the results of a recent review by the Board's staff that assessed the design, function, and maintenance of selected safety systems at three of LANL's principal nuclear facilities: the Plutonium Facility, Weapons Engineering Tritium Facility, and Chemistry and Metallurgy Research Facility. The results of the staff's review, which are included as an enclosure to this letter, indicate that a number of significant and systemic deficiencies exist at LANL related to assuring the design, functionality, and maintenance of

safety systems. These deficiencies appear to be widespread, and of varying levels of severity, at each of the facilities reviewed by the staff. They include the following:

- Incomplete or inadequate descriptions of system safety functions;
- Weak or missing fundamental design information and calculations;
- Failure to verify credited safety functions through periodic surveillance and testing;
- Failure to implement appropriate maintenance activities to ensure that safety systems can continue to perform their credited function;
- Lack of adequate normal and abnormal operating procedures to govern the operation of safety systems;
- Lack of formal setpoint calculations for critical system operating parameters; and
- Outdated and, in some cases, inadequate safety bases.

While it is arguable whether any of the individual system deficiencies identified by the staff constitute an immediate safety concern, their collective importance and widespread nature warrant immediate attention. In particular, these issues cast doubt on the laboratory's ability to demonstrate that credited safety systems can reliably perform their safety functions under all required design basis conditions. Additionally, the Board is concerned that the contractor and Los Alamos Site Office are not providing the level of oversight required to identify the types of issues reflected in the staff's report. Based on the findings in the enclosed staff report, the Board lacks confidence in LANL's efforts to improve the reliability of safety-related systems.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a report and briefing within 60 days of receipt of this letter describing specific actions NNSA has taken to (1) facilitate timely and effective implementation of ongoing safety improvement initiatives for nuclear operations, (2) rapidly increase confidence in safety systems currently relied upon in operating nuclear facilities, and (3) improve the federal oversight of safety systems at LANL.

Sincerely,



A. J. Eggenberger
Chairman

c: The Honorable J. Clay Sell
Mr. Mark B. Whitaker, Jr.
Mr. Donald L. Winchell, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

August 31, 2007

MEMORANDUM FOR: J. K. Fortenberry

COPIES: Board Members

FROM: J. L. Shackelford

SUBJECT: Design, Functionality, and Maintenance of Safety Systems at Los Alamos National Laboratory

This report documents a review of the design, functionality, and maintenance of safety systems at Los Alamos National Laboratory (LANL), performed by the staff of the Defense Nuclear Facilities Safety Board (Board). This review was conducted by B. Broderick, C. Keilers, J. Plaue, C. Roscetti, and J. Shackelford during July 24–26, 2007.

Background. The Board's staff conducted a review at LANL to assess the design, functionality, and maintenance of selected safety systems at the Plutonium Facility (PF-4), Weapons Engineering Tritium Facility (WETF), and Chemistry and Metallurgy Research (CMR) Facility. The review focused on the design, safety basis, and other calculations and analyses for the selected systems, and evaluated the functional requirements for the systems during accident or abnormal conditions. The staff reviewed system test, surveillance, and maintenance activities to investigate whether the acceptance criteria specified for these activities were adequately supported by design calculations or other engineering documents. The review included an assessment of the normal and emergency operation of the systems to determine whether such operations were governed by approved operating procedures and were consistent with the design basis.

The staff noted that some earlier assessments, such as the November 2005 inspection by the Office of Independent Oversight, had identified a number of deficiencies at LANL regarding design bases, surveillance, and maintenance. The previous contractor attempted to address these deficiencies through institutional improvement initiatives, including the now terminated "Operational Efficiency" effort. More recently, the present contractor developed and has begun implementing a new approach known as the "Formality of Operations" initiative, which includes elements related to conduct of engineering, operations, maintenance, and training. This effort is not yet mature or fully implemented. As a result, limited benefits have been realized at the floor level from these efforts.

The following sections summarize the staff's findings regarding the safety systems that were reviewed at specific laboratory facilities.

Plutonium Facility

Instrument Air System (IAS)—The IAS is identified as a safety-significant system whose function is to support the safety function of the ventilation system. The system is intended to supply compressed air for the ventilation system's pneumatic controls and the primary start capability for the non-safety-related standby diesel generator.

While a draft is in progress, no formal system design description existed for the IAS at the time of the staff's review. Further, the system lacked a complete set of approved engineering drawings. As a result, there was inadequate formal design information available to support an effective program of surveillance, testing, and configuration management. For example, it appeared from an operational perspective that both the quality and moisture content of the air were important process variables associated with the system. However, these parameters were not discussed in any of the design documents, and there were no surveillance or test procedures that verified these parameters. Consequently, the inoperability of the system air dryers would likely lead to overall system degradation and operability issues, but no Technical Safety Requirement (TSR) controls or limiting conditions for operation existed to address this situation.

Other IAS deficiencies included (1) a lack of permanent system component identifiers, (2) the absence of normal or abnormal operating procedures, and (3) the lack of a formal calculation for the setpoint associated with the annual system test used to verify the ability of the ventilation system to shut down on a loss of air. Consequently, it was unclear whether the test actually verified the assumptions set forth in the safety basis.

Vault Water Baths—The vault water baths are identified as a safety-class system to shield the heat-generating plutonium containers from convective and radiative heat transfer during a fire in the vault room. The system includes a noncredited heat exchanger that is used to remove heat from the containers. The safety function of the water bath cooling system does not appear to have been adequately defined, documented, and assured.

The new and recently approved system design description is inconsistent with Department of Energy (DOE) Standard 3024-98, *Content of System Design Descriptions*, as well as the existing institutional procedure. Specifically, it does not contain an adequate description of the system requirements and bases. For example, the system lacks an adequate design calculation addressing the expected system heat loads. The existing calculation is an informal, poorly documented assessment that contains a number of mathematical errors, nonconservative assumptions, and misconceptions regarding fluid flows and heat transfers. Based on the available system specifications and using conservative assumptions, the staff performed an assessment of the system and determined that at the maximum postulated design loading (a parameter not captured in the system design description, but obtained from the informal calculation), the system heat exchanger is probably significantly undersized to meet normal system cooling needs. DOE and the contractor asserted that the heat exchanger is not credited in the safety basis; however, the staff noted that at the maximum design loading of the plutonium containers, a (much larger) heat exchanger appeared to be required to prevent boiling in the system.

Other deficiencies included the following: (1) not all system valves or components were adequately labeled, and (2) no abnormal operating procedures existed for the system.

Weapons Engineering Tritium Facility (WETF)

Tritium Gas Handling System (TGHS)—The TGHS is identified as a safety-significant system whose safety function is to provide primary containment during tritium processing activities.

The TGHS has an approved system design description; however, the document is incomplete and does not meet the expectations set forth in the institutional procedure. Additional design information associated with the TGHS is contained in the WETF Final Safety Analysis Report (FSAR) and other documentation. The functional requirements of the system include the following performance criteria:

- TGHS shall be leak tight to 10^{-3} std cm³/s at 1 atm.
- TGHS shall be designed and built to Performance Category (PC)-2 performance criteria.
- TGHS shall be built and designed to have overpressure protection to the maximum allowable working pressure.
- TGHS shall have overtemperature protection on heated sections of the system.

Notwithstanding these explicit performance criteria, the only relevant surveillance associated with the TGHS was an annual in-service inspection of the system that required a visual inspection for signs of wear, degradation, or unauthorized modifications. This inspection consisted primarily of a subjective, qualitative assessment of overall system condition, and did not specifically verify any of the safety functions listed above. Contractor personnel indicated that they relied on various noncredited operational parameters and operators' system awareness during operations to verify the safety function of the system, instead of a formal test or surveillance, in the belief that such testing would be difficult and disruptive. As a result, the staff concluded that surveillance activities did not adequately verify the credited safety functions of the system. With respect to overpressure protection, the staff noted that no formal design calculations were in place to verify that the capacity of the credited system equipment (i.e., the system "dump tank") was sufficient to handle the design basis overpressure volume. In the case of overtemperature protection, it was observed that such protection was afforded by a number of portable monitoring and circuit interruption devices that were attached to the relevant system components. However, the safety pedigree of these devices was uncertain. It also appeared that no formal documented setpoint calculations taking into account loop and instrument uncertainties were available to demonstrate that the devices could carry out their desired safety function. There were also no surveillance requirements associated with verifying and maintaining this credited safety function.

Other deficiencies observed regarding the TGHS included the following: (1) the functional requirement for the TGHS to remain leak tight during an evaluation basis fire had no associated performance criteria; (2) a number of general guidance documents were available to govern system precautions and lineups, but no formal operating procedures existed to prescribe the full range of operational alignments; and (3) the abnormal operating procedures for anticipated system upset conditions were weak and relied heavily on operator knowledge and training in concert with management involvement.

Inert and Oxygen Monitoring System (I&OMS)—The I&OMS provides indication and alarm for a high oxygen concentration in the WETF gloveboxes. The inerting function of the system provides and maintains an inert atmosphere to prevent a fire and formation of tritiated water vapor.

A number of deficiencies were identified with respect to the I&OMS. In particular, the system's alarm setpoint of 4 percent oxygen, which is credited in the TSR to prevent combustion, lacked a design calculation. This deficiency was exacerbated by the fact that the methodology for the semiannual surveillance could result in actuating the alarm as high as 4.5 percent. Moreover, some detectors were unfastened, which could lead to improper oxygen measurements due to obstruction of the detectors.

Other deficiencies noted with the I&OMS included the following: (1) the system uses two differently scaled meters (0–5 percent and 0–25 percent) to display the oxygen concentrations, which could lead to inconsistencies in the alarm actuation setpoints; (2) the weekly surveillance procedure only verified that the system had electrical power. The weekly surveillance could not readily detect a failed oxygen sensor; and (3) the limited procedures for response to an elevated oxygen concentration were weak, relied heavily on operator knowledge and training, and would not necessarily result in elimination of the potential combustion hazard.

Chemistry and Metallurgy Research Facility

Wing 9 Hot Cell Door Interlock System—The hot cell door interlocks are a safety-significant system designed to limit radiation exposure to workers performing operations in the CMR hot cells. The system uses an array of detectors to monitor radiation and prevent the operation of various combinations of doors, if elevated radiation levels are detected.

Based on the geometry of the hot cells and the placement of the detectors, it is not apparent that the calculation used to determine the detector setpoint of 32 mrem/hr is conservative, especially when the sensitivity of the detectors is taken into account. The system design also included a delay of 120 seconds to allow sufficient time for the detectors to detect a high-radiation condition and send a signal to the logic circuits. However, there is no analysis to support a determination of whether this time interval is sufficient to achieve the desired safety function.

Other deficiencies associated with the interlocks included the following: (1) the system lacked a formal system design calculation; (2) the periodic surveillance performed to test the safety function of the interlock only verified the logic circuits and did not physically test whether the interlock would actually work to prevent door operation; (3) no preventive maintenance was specified for the flexible hoses used to convey the high-pressure hydraulic fluid to actuate the 18 ton doors; (4) the backup hydraulic hand pump would not be capable of shutting an open door after a hydraulic rupture, and there were no abnormal operating procedures to guide operator recovery action; and (5) during a walkdown of the system, the staff discovered an unauthorized temporary modification installed on the system, and the cognizant system engineer had not been made aware of the modification or its effects on the system safety function.

Hot Cell Manipulator Boot Seals—The hot cell manipulator boot seals are identified as a safety-significant system at the CMR Facility. Their safety function is to prevent or minimize personnel exposure caused by contamination leakage from the hot cell manipulators.

No formal system design description had been developed for the boot seals. Rather, the only relevant design information was contained in the CMR Basis for Interim Operation (BIO) and various system and component drawings. A more recent (though unapproved) BIO specifically defines the boot seal safety function as being able to maintain pressure of at least 0.25 in. wc (water column) with air or nitrogen at a flow rate of less than 30 scfh (standard cubic feet per hour). The staff found that no formal surveillance testing or TSRs existed to confirm or otherwise verify the safety function of the boot seals. Rather, the facility relied on operator knowledge of the system to ensure that it functioned as expected. Indications of system operation were available to the operators via pressure and flow gauges in the vicinity of the controls for the manipulator arms outside the hot cells. In many cases, however, these indications were well above eye level and would be difficult to monitor during normal operation. There were no alarms associated with acceptable leakage thresholds, and the instrumentation provided did not appear to be in a formal calibration program.

Other deficiencies observed with the boot seals included the following: (1) there were no normal or abnormal operating procedures for the system, and as a result, it was unclear whether conservative action would be taken following a loss or malfunction of the boot seal system during operation; (2) maintenance activities associated with the boot seals relied on an “expert-based system,” but funding did not exist for such an expert; and (3) system maintenance was documented primarily by means of a system maintenance log, with parts replaced as needed, presumably in a run-to-failure mode rather than a more formal, systematic preventive maintenance protocol.

Safety Basis Issues. None of the facilities assessed were operating under safety bases that fully complied with 10 Code of Federal Regulations (CFR) Part 830, *Nuclear Safety Management*. In particular, the CMR Facility is operating under a 1998 BIO and associated TSRs, PF-4 is operating under a 1996 FSAR with more recently developed interim TSRs, and WETF is operating under a 10 CFR 830-compliant documented safety analysis that was approved in 2004, but has undergone none of the required annual updates. It was evident to the

staff that many of the deficiencies identified during the review resulted in part from the lack of modern and compliant safety bases. The laboratory's Safety Basis Improvement Plan includes updates for WETF and PF-4 by the end of fiscal year 2007 and the following year for CMR; however, it is unclear whether these goals will be met.

DOE Oversight Issues. The staff observed that the oversight processes of the Los Alamos Site Office and the contractor lacked a mechanism for identifying the types of issues noted by the staff. Many of the issues identified as a result of the staff's review represent fundamental problems related to design bases, operational safety, testing, and maintenance that should be the routine focus of an effective ongoing oversight process. Although some of these types of issues had previously been identified by the contractor and external audits, the staff observed that the site office had not adequately addressed these issues or their root causes.

Summary. The staff's review revealed a number of significant deficiencies at LANL with respect to assuring the design, functionality, and maintenance of safety systems. These deficiencies included the following: (1) incomplete or inadequate descriptions of system safety functions, (2) weak or missing fundamental design information and calculations, (3) failure to verify credited safety functions through periodic surveillance and testing, (4) failure to implement appropriate maintenance activities to ensure that safety systems can continue to perform their credited function, (5) lack of adequate normal and abnormal operating procedures to govern the operation of safety systems, (6) lack of formal setpoint calculations for critical system operating parameters, and (7) outdated and, in some cases, inadequate safety bases.

The development and implementation of a formal, systematic approach to ensuring the functionality and operability of safety systems that includes robust design calculations, relevant system testing, fundamental maintenance practices, and adequate system operating procedures is an essential element of sustainable safe operations. However, the staff observed that in many cases, the LANL facilities that were reviewed relied more on expert judgement, operational awareness, and informal guidance to ensure the operability of safety systems. The widespread nature of these deficiencies warrants immediate attention. Consequently, the staff concluded that additional focused actions of an immediate nature are necessary to identify and resolve these issues and to improve confidence in credited safety systems.



Results in Brief



Audit Report on Fire Protection Deficiencies at Los Alamos National Laboratory

DOE/IG-0816

June 25, 2009

Why we conducted this review?

We initiated this audit to determine whether pre-existing fire protection deficiencies at the Los Alamos National Laboratory had been addressed.

Background

The Department of Energy's Los Alamos National Laboratory (Los Alamos) maintains some of the Nation's most important national security assets, including nuclear materials. Many of Los Alamos' facilities are located in close proximity to one another, are occupied by large numbers of contract and Federal employees, and support activities ranging from nuclear weapons design to science-related activities. Safeguarding against fires, regardless of origin, is essential to protecting employees, surrounding communities, and national security assets.

On June 1, 2006, Los Alamos National Security, LLC (LANS), became the managing and operating contractor for Los Alamos, under contract with the Department's National Nuclear Security Administration (NNSA). In preparation for assuming its management responsibilities at Los Alamos, LANS conducted walk-downs of the Laboratory's facilities to identify pre-existing deficiencies that could give rise to liability, obligation, loss or damage. The walk-downs, which identified 812 pre-existing fire protection deficiencies, were conducted by subject matter experts, including fire protection experts.

What we found...

Our review disclosed that LANS had not resolved many of the fire protection deficiencies that had been identified in early 2006:

- Of the 296 pre-existing deficiencies we selected for audit, 174 (59 percent) had not been corrected; and,
- A substantial portion of the uncorrected deficiencies, 86 (49 percent) were considered by the walk-down teams to be significant enough to warrant compensatory actions until the deficiency was corrected or was tracked to closure through implementation of corrective actions.

Further, we found that 32 of the significant deficiencies had been closed by the previous Los Alamos contractor, prior to LANS assuming responsibility for operation of the Laboratory, even though the deficiencies had not been corrected.

A fire protection expert provided technical support during the audit.

We concluded that the uncorrected fire protection deficiencies identified by the LANS walk-down team had not been properly resolved because the Department's Site Office had not effectively administered the Los Alamos contract. Specifically, the Site Office had not ensured that LANS and the former Los Alamos contractor made the necessary improvements to correct identified fire protection deficiencies nor had it validated the efficacy of corrective actions. Further, the Site Office had not established expectations for LANS to correct deficiencies, including properly structured contract incentives to achieve that goal.

Absent strong fire protection leadership by Federal officials, LANS had not fully evaluated the most significant deficiencies identified by the walk-down team to determine whether they had been corrected or if additional actions were needed. In particular, LANS had not tracked nor verified that corrective actions had actually been taken to remedy deficiencies.

Management disagreed with our conclusions, specifically, regarding the potential impact of the fire protection deficiencies. However, Management expressed its agreement with the proposed corrective actions and recommendations, and, during the course of audit field work, informed the audit team of corrective actions that it planned to take. As noted in the report, despite its stated disagreements with the audit conclusions, after we pointed out unresolved deficiencies both contractor and NNSA officials initiated action to reassess and/or correct individual fire protection problems. NNSA's completed and planned actions, when combined with our recommendations to adequately incentivize contractor performance, should, if completely implemented, help reduce the health, safety, and property risks associated with fire protection weaknesses at the Los Alamos National Laboratory.

To view the full report, click on the following link:
<http://www.ig.energy.gov/documents/IG-0816.pdf>

For more information, contact judy.garland-smith@hq.doe.gov

Kieling, John, NMENV

From: Sheri Kotowski [serit@cybermesa.com]
Sent: Friday, May 07, 2010 12:28 PM
To: Kieling, John, NMENV
Cc: Joni Arends; Marian Naranjo; Yesca Sullivan
Subject: 3rd document to EVEMG comment letter

Attachments: sir_20081208_la.pdf



sir_20081208_la.pdf
f (1 MB)

Dear Mr. Kieling,

Attached you will find the missing attachment to EVEMG's comment letter. I was not able to get it attached in with the other two documents and our comment letter.

Respectfully,

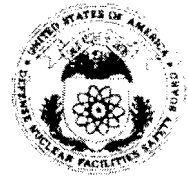
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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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December 8, 2008



The Honorable Thomas P. D'Agostino
Administrator
National Nuclear Security Administration
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0701

Dear Mr. D'Agostino:

In a letter to the National Nuclear Security Administration (NNSA) dated May 31, 2005, the Defense Nuclear Facilities Safety Board (Board) raised a number of issues regarding weaknesses in the fire protection program at Los Alamos National Laboratory (LANL). Paramount among these issues was the lack of a formal plan to address the baseline needs assessment for fire and emergency services conducted in 2004 and the lack of a long-term contract for these services with Los Alamos County. The Board acknowledges NNSA's recent completion of a cooperative agreement for fire and emergency services with Los Alamos County. The Board remains concerned regarding the outlook for aligning those services with the unique capabilities required to meet the fire protection needs of LANL. The enclosed report, prepared by the Board's staff, indicates that recommendations resulting from prior baseline needs assessments have not been addressed despite extensive analysis and plans.

The report further indicates that there are weaknesses in the current capability to respond to a fire or other emergency event in the unique hazard environments associated with defense nuclear facilities at LANL. This situation is a direct result of the failure to implement long-standing recommendations made in the 1995 and 2004 Baseline Needs Assessments, and is further evidenced by observations made and issues identified by Los Alamos National Security, LLC during recent emergency exercises. The enclosed report also finds that staffing shortages may be hindering needed improvements to the laboratory's fire protection program.

The Board understands that an updated baseline needs assessment is being prepared and is expected to be completed in December 2008. Timely completion of a comprehensive assessment and aggressive resolution of the associated recommendations should help improve the capabilities to respond to an emergency at LANL. The Board believes that NNSA must do a better job of implementing recommendations resulting from their baseline needs assessment than previously done in order to provide an adequate level of fire protection.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a report within 90 days after receipt of this letter that provides the following information:

- The prudent immediate measures to be taken to begin improving the identified weaknesses in fire and emergency response capabilities prior to fully implementing the updated baseline needs assessment;
- A summary of the results of the latest 2008 Baseline Needs Assessment (being prepared) focusing on the specific capabilities (in terms of equipment, personnel, training, and planning) necessary to provide comprehensive, effective fire and emergency response for the defense nuclear facilities at LANL and how the recently completed cooperative agreement for fire and emergency response will address these capabilities; and
- The strategy and schedule for achieving the necessary fire and emergency response capabilities.

Subsequently the Board also requests a report within 180 days of receipt of this letter that details plans, schedules, funding sources, and progress for fully implementing the updated Baseline Needs Assessment.

Sincerely,

A handwritten signature in black ink, appearing to read "A. J. Eggenberger". The signature is fluid and cursive, with a large initial "A" and "E".

A. J. Eggenberger
Chairman

Enclosure

c: Mr. Donald L. Winchell, Jr.
Mr. Mark B. Whitaker, Jr.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

September 5, 2008

MEMORANDUM FOR: T. J. Dwyer, Technical Director

COPIES: Board Members

FROM: J. Galaska, C. March

SUBJECT: Fire and Emergency Response Capabilities for Defense Nuclear Facilities at Los Alamos National Laboratory

This report documents a review of the capabilities to respond to a fire or other emergency at Los Alamos National Laboratory's (LANL) defense nuclear facilities. This review was conducted by members of the staff of the Defense Nuclear Facilities Safety Board (Board) J. Galaska and C. March, who visited the laboratory during July 21–23, 2008. The review also encompassed an examination of the laboratory's fire protection program, including an assessment of documentation covering recent emergency drills and exercises in which the Los Alamos County Fire Department (LACFD) participated.

Federal regulations and contractually invoked Department of Energy directives require the laboratory to provide suitable fire and emergency response for its defense nuclear facilities. The primary requirements for providing fire and emergency response are summarized in the attachment to this report and form the basis for the issues outlined in this report.

Prior Recommendations to Achieve Necessary Response Capabilities Have Been Poorly Implemented. An effective emergency response capability is measured by the establishment of and comparison with predefined emergency fire, medical, and hazardous materials response capabilities, including staffing, apparatus, facilities, equipment, training, pre-plans, offsite assistance, and procedures. These requirements are typically identified in the Baseline Needs Assessment and are supplemented with additional detail in responder training plans and facility-specific fire pre-plans.

A Baseline Needs Assessment was last completed at LANL in 2004. Seventeen recommendations were developed, which covered response to both the laboratory and the balance of Los Alamos County. Since that time, minimal progress has been achieved in closing these recommendations. Efforts essentially stopped in 2007 because of a perception of changing needs. Four recommendations that have not been closed pertain directly to the capability to respond to an emergency at a nuclear facility. These recommendations are long-standing and date back to similar recommendations in the 1995 Baseline Needs Analysis. The recommendations also correspond to the weaknesses in staffing, training, and planning observed

during the recent exercises, which are discussed further below. In particular, the recommendations include the need to:

- Increase minimum staffing from 28 to 45 per shift for a total of 159 personnel
- Develop a “hot patient” protocol for dealing with contaminated victims
- Ensure the accuracy of hazard information in fire pre-plans
- Conduct familiarization walk-throughs by the firefighters of each major facility at least biennially

Exercise Performance Suggests the Need for Improvement. The laboratory contractor’s observations regarding recent site emergency drills and exercises in which LACFD participated suggest significant weaknesses in the ability of the fire department to provide an appropriate level of emergency response for LANL’s defense nuclear facilities. These observations indicate a lack of comprehensive training and hazard awareness, insufficient staffing, and a lack of individual facility response planning. Key observations made by the contractor include the following:

- In an exercise on July 30, 2007, at the Waste Characterization, Reduction, and Repackaging Facility, LACFD personnel were ineffective in providing first aid to an injured and contaminated man because of an inability to understand and properly interpret the magnitude of hazard related to the dose rate and contamination level information that they were provided.
- In an exercise on November 6, 2007, the route of entry used by both the facility and LACFD personnel responding to a fire at the Plutonium Facility would have resulted in the spread of contamination. Furthermore, responding groups did not establish required clean and contaminated zone perimeters. As a result, the first LACFD vehicle to arrive parked near a potential contamination zone; it also blocked access for additional responding units.
- In an exercise on May 20, 2008, LACFD personnel were unprepared to respond into a tritium release area at the Weapons Engineering Tritium Facility. Participation in the exercise by an actual ambulance crew was also intentionally eliminated because of LACFD staffing shortages.

The Board’s staff believes these observations require near-term actions to improve emergency responders’ training, pre-planning, and familiarity with the defense nuclear facilities at LANL. Furthermore, despite the significant observations listed above, the exercise objectives were rated as having been successfully met in most cases. This indicates the need to refine the objectives related to responders, including LACFD, so as to assess the effectiveness of training and planning more rigorously. Supplemental exercises and drills focused on first responders should be considered.

Updated Assessment to Improve the Understanding of Response Needs. The laboratory has initiated an update to the 2004 Baseline Needs Assessment, with a projected completion date of December 2008. This update, which will focus solely on laboratory needs, will establish requirements for emergency response capabilities for the facilities at LANL. This updated information will delineate the expectations for performance in a nuclear facility environment, as well as revised training and fire pre-plans to comprehensively address issues such as the following:

- Firefighting within radiologically contaminated areas
- Appropriate usage of firefighting water in areas containing nuclear materials
- Appropriate usage of specialized firefighting agents, such as graphite and metal-x, on nuclear materials
- Firefighting techniques and issues for fires within gloveboxes
- Firefighting techniques and issues for fires within high-efficiency particulate air filter plenums
- Emergency medical response for radiologically contaminated individuals
- Containment of firefighting water runoff
- Hazard awareness and response to incidents involving unique materials such as tritium, plutonium, and enriched uranium
- Operation and use of active and passive nuclear facility fire protection features

Inadequate Staffing May Be Impeding Progress toward Improving the Fire Protection Program. Previous staffing evaluations identified a need for ten engineers in the Fire Protection Group. However, the budgeted staffing level for these functions is currently six engineers, with unfunded plans for an additional two limited-term positions. The limited staffing has impeded progress on previously identified fire protection issues, including inadequate program oversight; delayed completion of Fire Hazard Analyses; incomplete resolution of recommendations resulting from Fire Hazard Analyses; and lack of timely completion of required inspection, testing, and maintenance of fire protection equipment.

The laboratory is also served by a Fire Marshal Office, which is intended to provide independent review of fire protection design and analysis activities, concurrence with fire protection code equivalencies and exemptions, and participation in readiness verification activities. Staffing for this group is currently at one, with unfunded plans to add a second engineer. At least in part due to staffing shortages in the Fire Protection Group, the Fire Marshal has been providing expanded support to that group for high priority issues. The Board's staff believes this situation compromises the independence of the Fire Marshal function.

Site-Wide Fire Water Distribution Network Requires Evaluation. Aside from Technical Area 55, which has its own dedicated system, the defense nuclear facilities at LANL are supplied with fire water from a site-wide distribution system fed by Los Alamos County. In a number of nuclear facilities, this system supports fire suppression systems that have been identified as safety-class or safety-significant. As a result, NNSA and laboratory management have begun evaluating the adequacy of this water-supply system—which is not classified as a safety system—to reliably supply adequate water to these facility safety systems. The Board's staff understands

that these evaluations include a review of the distribution network; the potential for single-point failures; monitoring and alarm systems; facility notification protocols; and surveillance, calibration, and maintenance requirements. The intent of these efforts is to establish confidence that any degradation in the site-wide water supply that could impact credited fire suppression systems in nuclear facilities would be identified quickly, allowing the affected facilities to take appropriate response actions.

Attachment

Regulatory Drivers: Code of Federal Regulations and Department of Energy Orders

Department of Energy (DOE) Order 420.1B, *Facility Safety*, Section II, Part 3.b.(7), requires access to qualified and trained firefighting personnel in accordance with following:

Access to qualified, trained fire protection staff that includes fire protection engineers, technicians, and fire fighting personnel to implement the requirements of this Order.

DOE Order 151.1C, *Comprehensive Emergency Management System*, Part 4.a.(1)(a), requires the development of a system that ensures the following:

The Department can respond effectively and efficiently to Operational Emergencies and Energy Emergencies and can provide Emergency Assistance so that appropriate response measures are taken to protect workers, the public, the environment, and the national security....

DOE Order 151.1C, Sections 4.a.(2) and (3), further requires emergency planning and preparedness that includes identifying hazards, preparing emergency plans and procedures, and practicing response:

(2) Emergency planning must include identification of hazards and threats, hazard mitigation, development and preparation of emergency plans and procedures, and identification of personnel and resources needed for an effective response.

(3) Emergency preparedness must include acquisition and maintenance of resources, training, drills, and exercises.

Under 10 Code of Federal Regulations (CFR) 835.1302, individuals performing emergency actions are required to be trained on the identified hazards in accordance with the following:

§ 835.1302 Emergency exposure situations.

(a) The risk of injury to those individuals involved in rescue and recovery operations shall be minimized.

(b) Operating management shall weigh actual and potential risks against the benefits to be gained.

(c) No individual shall be required to perform a rescue action that might involve substantial personal risk.

(d) Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at § 835.202(a) shall be trained in accordance with § 835.901(b) and briefed beforehand on the known or anticipated hazards to which the individual will be subjected.

In 10 CFR 851, Appendix A, *Worker Safety and Health Functional Areas*, requirements are established for implementing the applicable functional areas mandated by § 851.24. The following portions apply to the emergency response organization:

2. Fire Protection

(a) Contractors must implement a comprehensive fire safety and emergency response program to protect workers commensurate with the nature of the work that is performed. This includes appropriate facility and site-wide fire protection, fire alarm notification and egress features, and access to a fully staffed, trained, and equipped emergency response organization that is capable of responding in a timely and effective manner to site emergencies.

(b) An acceptable fire protection program must include those fire protection criteria and procedures, analyses, hardware and systems, apparatus and equipment, and personnel that would comprehensively ensure that the objective in paragraph 2(a) of this section is met. This includes meeting applicable building codes and National Fire Protection Association codes and standards.