

## TESTIMONY

**G. Peter Nanos, Director  
Los Alamos National Laboratory**

**Defense Nuclear Facilities Safety Board  
Public Meeting  
December 16, 2003**

Mr. Chairman and Members of the Defense Nuclear Facilities Safety Board...

Thank you for this opportunity to provide testimony on Los Alamos National Laboratory's performance assurance system. With over 35 years of experience successfully managing large, complex, and high risk nuclear and non-nuclear activities in the Navy, I fully recognize and embrace the importance of a comprehensive, robust assurance system as an essential and critical management tool. I also recognize that the Laboratory does not yet meet your, the Department of Energy's, and my expectations for a robust assurance system. Many of the performance issues we have been addressing in recent years would have been prevented if potentially adverse trends were identified in a timely manner and effective corrective actions were developed and implemented.

It is clear that we must strengthen our assurance system to identify and correct emerging performance issues before they become significant so that improvement is assessment-driven, not event-driven. To that end, we are taking actions to improve our assurance system regardless of how and when DOE and NNSA expectations for line oversight and contractor assurance are articulated. Ultimately, that overarching assurance system will provide us an integrated performance management tool for all facets of Laboratory programs, management and administration, business practices, and operations.<sup>1</sup> I will focus this testimony, however, on those aspects of the Laboratory's assurance system most relevant to the Board's interests. I will describe the current status of the Laboratory's assurance system and actions underway and planned to strengthen this important management tool. In doing so, I will address the Laboratory's ability to fulfill the intent of the draft DOE-P-226.1, *Department of Energy Oversight Policy*, and the draft NNSA *Line Oversight/Contractor Assurance System Policy* Letter.

### **SELF-ASSESSMENT ACTIVITIES AND EXPECTATIONS**

The Laboratory's performance assurance system is driven by a variety of requirements, foremost of which is 10 CFR 830, Subpart A, *Quality Assurance*. Contractual drivers include clause H.007 of the University of California's contract for the management and operation of the Laboratory, *Performance-Based Management*. I have provided you a copy of that clause in attachment 1 to my written testimony. The contractual expectations of the clause are reinforced by requirements identified in Appendix G of the contract and the associated Work Smart

<sup>1</sup>The term "operations" refers to those functional areas under the purview of the Laboratory's Associate Director for Operations which include those relevant to the safety of the public, workers, and the environment.

Standards. Key examples of contractual standards with assurance-related requirements include DOE-O-414.1A, *Quality Assurance*, and DOE-O-5480.19, *Conduct of Operations Requirements at DOE Facilities*. In addition, the Laboratory is subject to many assurance-related requirements embedded within the contractual standards, ranging from the quality requirements of QC-1 and NQA-1 to activity- and function-specific assessment requirements. Institutional implementation of these requirements is effected through Laboratory Performance Requirement (LPR) 307-01-00, *Performance Assurance*, Laboratory Implementation Requirement (LIR) 307-01-01, *Management Assessment*, and LIR 307-01-03, *Issues Management*.

Appendix F of the University's contract for management of the Laboratory is the nexus of the Laboratory's performance assurance system. This performance management process underwent significant revision in FY03 and is being tailored further in FY04 to assure NNSA, the University of California, and the Laboratory are provided a foundation for risk-based management and decision-making. The "critical few" contractual performance objectives and measures defined in Appendix F drive improvement in meeting technical objectives and due diligence in the oversight of management systems. The joint University of California/Laboratory Contract Evaluation Plan defines the processes for the review of contractual performance measures. Importantly, senior Laboratory managers are directly involved in the real-time management and oversight of Appendix F performance through the Contract Performance Evaluation Board.

The Laboratory's performance assurance system directly supports the overarching objectives of Appendix F. Most of the elements of that system (shown in attachment 2 of my written testimony) are in place. Their implementation, however, is not always effective. In a few cases—primarily in the area of corrective action management—system elements are not sufficiently mature (for example, causal analysis) or are not formally defined (for example, corrective action change control processes). That said, the Laboratory suffers most from the poor definition and management of the functional interfaces between assurance system elements. Perhaps the best illustration of this shortfall is the inconsistent use of assessment data to drive improvement. Innumerable internal and external assessments provide volumes of performance data. Far too often that information is not used effectively—if at all—to improve performance because clearly-defined mechanisms for translating assessment findings into viable corrective action plans are inadequate.

I have taken specific, near-term actions to address these shortfalls by strengthening the roles and responsibilities of the Director's Central Safety and Security Committee and the establishment of the Nuclear Safety Executive Board. The explicit intent of these groups is to assure focused senior management engagement in the oversight and resolution of both non-nuclear and nuclear safety and security issues. I chair both the Central Safety and Security Committee and the Nuclear Safety Executive Board; members include my deputy and associate Laboratory directors. I will address initiatives to better manage the interfaces between assurance system elements and improve corrective action management later in this testimony.

## Assessment

The Laboratory's assessment program is comprised of three major elements: management assessment, independent assessment, and program review. Sub-elements are often executed at multiple levels within the Laboratory's organizational hierarchy. For example, self-assessment can—and must—be conducted at virtually every hierarchical level: from post-job meetings at the work level to management walk-arounds and formal line self-assessments. The semi-annual Appendix F performance reviews conducted by senior Laboratory management, the University of California, and NNSA leadership are supported by these subordinate levels of self-assessment. Many elements of the Laboratory's assessment program serve as both management and independent assessments. For example, an assessment of a specific functional area such as radiological protection is—from the perspective of the Laboratory—a self-assessment of the institutional radiological protection program. That same functional assessment, however, serves as an independent assessment of organizations or facilities responsible for implementation of the radiological protection program requirements.

In the following discussion, I will focus on the two areas of assessment most relevant to the Board's interests.

## Management Assessment

The management assessment program addresses the full spectrum of Laboratory operations and includes both routine (i.e., proactive) and for-cause (i.e., reactive) assessment activities. Performance expectations and criteria for the management assessment program are driven by the performance-based nature of the University of California contract (to include Appendix F), and Laboratory policies and values defined by the Director's Central Safety and Security Committee and the Nuclear Safety Executive Board.

- **Self-assessment:** A variety of activities fall into this category and include management walk-arounds, formal line organization self-assessments, and Appendix F performance evaluations. Managers are required to conduct a minimum of three formal walk-arounds per quarter. We have taken actions in recent months to improve the quality of walk-arounds. The line organization self-assessment program has been revised in the last year to better engage my Senior Executive Team in defining expectations and to better tailor objectives and criteria to areas of institutional emphasis. Line organizations are required to conduct these assessments on a quarterly basis. Line self-assessment data are reviewed by the Director's Central Safety and Security Committee.
- **Functional assessment:** These assessments focus on eleven functional areas: emergency management, environmental protection, facility management, fire protection, management systems, occupational safety and health, packaging and transportation, quality management, radiation protection, safeguards and security, and nuclear safety basis. The functional managers for each area are required to conduct assessments of their respective institutional program on a semi-annual basis. As with the line self-assessments, the results of functional assessments are reviewed by the Director's Central Safety and Security Committee. The results of these assessments contribute directly to

Appendix F performance evaluations. We are better defining the roles and responsibilities of the functional managers to strengthen this program.

- **Readiness:** The Laboratory formalized its readiness program in late 2002 with the issue of a formal requirements document and associated guidance that drive implementation of DOE-O-425.1C, *Startup and Restart of Nuclear Facilities*. Program implementation is still immature as evidenced by the number of pre-start findings identified in readiness assessments. We are seeing improvements, however. Most recently, an NNSA readiness assessment of Laboratory packaging and transportation activities concluded in two days due, in large part, to the quality of the Laboratory's readiness assessment.
- **Non-conformance reporting:** Although non-conformance reporting is formalized in several organizations and programs (for example, the Weapons Quality Assurance Organization), we do not yet have an institutional non-conformance reporting program in place. This initiative is included as part of our Institutional Quality Management Implementation Plan.
- **Incident investigation and reporting:** The Laboratory maintains a robust occurrence investigation and reporting program in accordance with the requirements of DOE-O-231.1A, *Environment, Safety, and Health Reporting*. In January, 2004, we will implement a Laboratory-wide incident reporting system to capture events that do not meet formal reporting criteria but have the potential to provide valuable data that could indicate the onset of adverse trends.
- **Price-Anderson investigation and reporting:** The Laboratory's PAAA program has been strengthened significantly in the last year. The Nuclear Safety Executive Board directly involves senior Laboratory management in assessment and mitigation of nuclear safety vulnerabilities and provides oversight and direction on all PAAA-related issues and actions. The PAAA Program Office coordinates activities of the PAAA Corrective Action Working Group which is comprised of representatives from each Laboratory directorate and division with nuclear safety responsibilities.
- **Employee concerns:** Group-level Nested Safety and Security Committee meetings provide employees a venue to communicate safety concerns. As necessary, those concerns are elevated to the division and directorate levels and, if still not resolved, to the Director's Central Safety and Security Committee. Employees may also communicate through the Laboratory's safety concern program. This web-based program directly engages the responsible line manager and tracks concerns to closure.

## Independent Assessment

The internal independent assessment program is managed by the Laboratory's Audits and Assessments Office; this organization also coordinates external assessment activities. The Office reports administratively to me and functionally to the University of California Auditor. I have just established and chair the Audits and Assessments Work Group. Comprised of senior Laboratory managers, the Work Group provides input to the auditors and assessors on risk identification and mitigation strategies, to assist in ensuring timely follow-up on corrective actions, and to create a forum for auditors and assessors to communicate with senior management about significant findings and trends identified through their work. The University Auditor is a member of the LANL Work Group.

- **Internal independent assessment:** The Internal Assessments Group (AA-2) conducts performance-based and compliance assessments and reviews of Laboratory processes and activities; these reviews include the eleven functional areas addressed in the management assessment program. Evaluation schedules are risk-based. Unscheduled reviews are conducted throughout the year as requested by Laboratory managers or as deemed necessary by the Audits and Assessments Office. As warranted, I task my associate directors with conducting independent, for-cause assessments of abnormal events.
- **Corporate assessment:** The University of California provides corporate oversight through its Regents' panels. In mid-November, the University rolled out plans to strengthen its Laboratory governance model. Key elements include a strengthened Laboratory Management organization, the establishment of a Laboratory Management Council and a National Security Laboratories Board of Directors, and plans for the addition of industrial partners to assist in the management and oversight of the Laboratory.
- **Third-party assessment:** Although the Laboratory does not yet have a formal program in this area, we recognize the value of independent, third-party assessments. Recent examples of such assessments include the Price-Waterhouse-Coopers review of business operations and the BWXT assessment of nuclear facility operations. We intend to strengthen this program in the coming year with assistance from the University of California. In addition, the University and the Laboratory are exploring industrial partnerships to provide cutting-edge expertise in areas of nuclear and higher-hazard facility operations and business practices.
- **External assessments:** The Audits and Assessments Office serves as the institutional liaison for routine and for-cause external assessments. The Laboratory coordinates its internal assessment schedule with external assessments conducted by NNSA's Los Alamos Site Office. On-going, real-time external oversight is provided by Los Alamos Site Office facility representatives and is augmented by formal assessment activities by the Site Office and the Office of Independent Oversight and Performance Assurance (OA).

## DOE AND NNSA OVERSIGHT AND ASSURANCE MODELS

As noted by Ambassador Brooks in his testimony to the Board on October 21, the NNSA's oversight policy builds directly on the draft oversight policy (DOE-P-226.1) and contains three fundamental elements:

- Critical, honest self-assessment by Federal and contractor organizations,
- Line management reviews, and
- Independent oversight reviews.

Contract clause H.007, *Performance-Based Management*, directly supports these elements in defining expectations for a broad-based, comprehensive performance assurance system of which Appendix F is a key component. In turn, the Laboratory's assurance system model identifies three major attributes that support both the ideals of the draft oversight policy and contractual expectations:

- **Governance:** Formal processes exist for establishing and maintaining dialogue between the contractor and site office to address key issues and formulate appropriate risk-based decisions.
- **Assurance:** Periodic and systematic review and evaluation of performance is afforded through assessment processes and systems that support Appendix F.
- **Improvement:** Processes and mechanisms are in place to assure appropriate, risk-based actions are developed and implemented to improve performance.

As I noted earlier, many of the elements necessary to support this model are in place. Significant changes have been made in the last year to the management and administration of the contractual performance evaluation process defined in Appendix F. Those changes are consistent with the draft oversight policy and assurance system model. Other recent initiatives supporting the ideals of the draft oversight policy include the establishment of the Performance Surety Division in April, 2002; the implementation of new and revised assurance system elements (readiness, management assessment, issues management); and the development and execution of an institutional quality management implementation plan.

A number of actions are necessary before the Laboratory can fully meet the intent of the draft oversight policy and, more importantly, have confidence that we are capable of adequately identifying and managing our issues. As I discussed earlier, work remains to fully define both the functional and organizational interfaces of the Laboratory's assurance system elements to assure roles, responsibilities, authority, and accountability are clear and understood. We must also strengthen our corrective action management program to assure necessary actions are efficiently and effectively implemented. Many of these improvements are underway and others will be initiated in the coming months as part of our implementation of the institutional quality management program. I expect that it will take 1.5–2 years before our performance assurance system is sufficiently robust and mature. During that period, I both expect and welcome a level of NNSA and DOE oversight commensurate with the level of risk presented by Laboratory operations and the maturity of our assurance system.

In the interim, I am taking a risk-based approach in the implementation of compensatory measures to address shortfalls in the Laboratory's assurance system. Many of these measures are associated with commitments I made to the Department of Energy's Office of Price-Anderson Enforcement (EH-6) in March, 2003. As you know, our appearance before EH-6 stemmed, in large part, from failures in our assurance system. Specifically, our inability to proactively identify and resolve issues resulted in nuclear safety violations and ineffective corrective actions resulted in recurring violations. Examples of some of the compensatory measures I have implemented include:

- Establishment of the Nuclear Safety Executive Board,
- Augmentation of the PAAA Program Office staffing,
- Appointment of a nuclear safety functional manager, and
- Increased emphasis on implementation of the institutional quality management program and components thereof (e.g., software quality assurance, management assessment, etc.).

More recently, the University of California and the Laboratory have embarked on developing industrial partnerships. This unprecedented initiative will integrate proven industrial expertise into key Laboratory management positions. The explicit intent of these partnerships is to accelerate implementation of programs that are important to formality of operations. I would welcome the opportunity to discuss this initiative with you in more detail.

It is important, obviously, to develop and monitor metrics to determine if the performance assurance system is meeting expectations. The Laboratory can no longer rely on the all-too-familiar lagging indicators to tell us our management systems are not adequate. We intend to work closely with the University of California, and the Los Alamos Site Office to develop appropriate leading indicators and metrics.

### **ASSURANCE SYSTEM STAFFING AND COMPETENCIES**

Many of the elements of the Laboratory's performance assurance system are in place. That system, as it matures, will meet the intent of the draft DOE oversight policy. Hence, relatively few new staff will be required to implement and maintain the assurance system. Those functional areas in which staff augmentation will be required include causal analysis, issues management, and trending and analysis. Personnel with the needed competencies for these areas exist within the Laboratory and subcontractors.

Organizational realignments (for example, the establishment of the Performance Surety Division) have allowed us to take advantage of economy of scale and reduce potential organizational interface conflicts by collocating assurance system responsibilities in a single organization. Additional organizational realignment is likely in the coming year to further enhance our ability to manage the performance assurance system.

### **CORRECTIVE ACTION MANAGEMENT**

As is the case throughout much of the complex, the Laboratory's corrective action management program has been the weak link in our performance assurance system. The Laboratory does not currently have a well-defined, overarching corrective action management program. Various elements exist throughout the Laboratory, but they are not formally linked (vertically or horizontally). The Nuclear Safety Executive Board and its protocols serve as compensatory measures for higher hazard nuclear activities pending broader, Laboratory-wide implementation. Similarly, efforts are underway to increase the effectiveness of the Director's Central Safety and Security Committee.

A new issues management requirements document (LIR 301-07-05, *Issues Management*) was developed in June, 2003, with full implementation scheduled in FY04. The Audits and Assessments Office manages and tracks corrective actions originating from external assessments and their internal independent assessments, but we do not yet adequately assess corrective action effectiveness in all areas. A notable exception is the PAAA Program Office's assessment of the effectiveness of selected corrective actions important to nuclear safety. Increased emphasis on assessment of corrective action effectiveness will be integrated into the management assessment program. To support these activities, we are actively working to identify and implement an

issues management tool that better facilitates “life-cycle” management of an issue from the point at which it is identified through the closure of the corrective action and subsequent review for corrective action effectiveness.

Until recently, formal causal analyses were limited to formal investigations and occurrence reports. We have developed and are applying more formal causal analysis protocols for nuclear safety issues. The Nuclear Safety Executive Board is responsible for the oversight of that process. We are in the process of extending and formalizing these causal analysis protocols Laboratory-wide. The Laboratory’s Occurrence Reporting and Investigation Group is developing a causal analysis process based on Integrated Safety Management that will be defined in a forthcoming revision to the requirements document and supporting guidance on event reporting, LIR 402-130-01, *Abnormal Events*.

We have taken steps to strengthen and formalize our trending and analysis and performance indicators programs through the combination of two organizations within the Performance Surety Division. Significant efforts in trending and analysis of events reportable under DOE-O-231.1A will be expanded for broader application to other types of events.

All these efforts are important, but are of no value if not effectively communicated. To that end, we are taking actions to better disseminate lessons learned, as evidenced by several new Laboratory lessons learned publications; these include:

- *1st Take*: immediate dissemination of event-specific lessons learned information important to protecting the health and safety of the public, workers, and the environment,
- *Final Take*: follow-up to *1st Take* communications to provides lessons learned information, including event causes and corrective actions, when the final investigation report becomes available, and
- *The Mirror*: a quarterly summary of lessons learned information.

The full development and implementation of the Laboratory’s corrective action management program will be the rate-limiting step in being able to demonstrate a sufficiently robust and mature performance assurance system. Recognizing the importance of this issue, we have worked through DOE/EH to schedule a technical assistance visit from INPO in January, 2004, that will focus explicitly on improving the Laboratory’s management of corrective actions.

## **CONCLUSION**

In summary, I want to reinforce that I have no greater personal responsibility than that for the safety of the public, workers, and the environment. I am fully committed to do what I can to fulfill that responsibility and have made it clear to my senior management team that my priorities are their priorities in this regard.

The Laboratory has made significant progress in the last year. I am proud of our collective efforts but we are not resting on those accomplishments. We fully recognize there is much work to do before we meet the expectations of our stakeholders and customers—as well as our own personal expectations—for excellence in all that we do. We are taking a risk-based approach in



the implementation of compensatory measures as we develop and implement the management systems and tools necessary to fully support the draft DOE and NNSA oversight policies. With the continued support and partnership of the DOE, NNSA, the University of California, and your constructive oversight, I have no doubt we will succeed.

On a closing note, we are aware of both the Board's and the Department's interest in the results of the Columbia space shuttle accident investigation. We share your desire to understand how lessons learned from that tragic accident can be help us do our work more safely. To that end, we have engaged in discussions with the University of California and hosted a visit from Mr. G. Scott Hubbard, Director of NASA Ames Research Center, on December 11. Mr. Hubbard was the sole NASA official on the Columbia Accident Investigation Board. We will also participate in formal discussions with Professor Karlene Roberts of the University of California/Berkley at the January, 2004, meeting of the University of California Regents' ES&H Panel. Professor Roberts served the Board as a consultant on organizational causes.

Again, thank you for the opportunity to present this testimony to you today. I will gladly entertain your questions.

**H.007 PERFORMANCE-BASED MANAGEMENT**

- (a) This Contract is a management and operating Contract arrangement that is performance-based. This performance-based management Contract uses clearly defined Standards of Performance consisting of Strategic Performance Objectives and supporting Performance Measures agreed to in advance on a fiscal year basis and are incorporated into the Contract as Appendix F. These standards are used for the appraisal and evaluation of work under this Contract .
- (b) (1) The Parties agree that the purpose of the Appendix F is to focus on strategic and mission-critical activities – i.e., the “critical few” – and to appraise the Contractor’s systems and outcomes in terms of:
- Are they producing appropriate national security, science and technology results?
  - Are they producing these results efficiently, safely and securely?
- (2) The framework for Appendix F consists of no more than ten interdependent Strategic Performance Objectives. These Objectives address the Contractor’s mission, operations, and management performance in support of NNSA’s current and future national security responsibilities.
- (3) Where one or more of the annually negotiated Objectives assumes integrated efforts and performance by Lawrence Livermore National Laboratory and Los Alamos National Laboratory, the Parties agree that performance will be evaluated on the basis of the integrated effort between the two Laboratories. Performance on all other Objectives will be evaluated separately for the two Laboratories. Further details about how the Contractor will evaluate their performance are contained in the Contractor’s Evaluation Plan.
- (4) The Parties agree that the Appendix F appraisal process is owned and managed by their respective senior executives, who will annually negotiate specific measures and other provisions. NNSA/DOE reserves the right for the Site Office Manager to make the final decision on the “critical few” performance objectives and measures. A rigorous, integrated performance evaluation process by the Contractor will be required for the purpose of documenting performance against Appendix F.
- (5) The Contractor will provide an annual Contractor’s Evaluation Report assessing their performance. An annual Performance Evaluation Report prepared by the Site Office Manager will provide an evaluation of the Contractor’s performance during the Appendix F appraisal period. NNSA/DOE will use the Contractor’s Evaluation Report as the primary basis for the annual appraisal of Contractor performance, recognizing that NNSA/DOE will take into account other pertinent information, including that performance against each Strategic Performance Objective is subject to timely availability of adequate funding, as well as operational oversight, internal and external program reviews and audits, consistent with the intent of this Contract, in determining the annual appraisal for performance.
- .

- (c) Appendix F is a key component of the Contractor's broad-based, comprehensive performance assurance system that provides sufficient information to validate that the Contractor is effectively and efficiently meeting requirements of this Contract. The Contractor's performance assurance system will address areas of performance not addressed in Appendix F. Additionally, it will provide for self-assessment and integrated oversight methods; processes to enhance efficiency and effectiveness; use of comprehensive and balanced peer review conducted through the University's President's Council to evaluate the overall quality of science and technology performance and Laboratory management's effectiveness in fostering an atmosphere conducive to scientific inquiry and intellectual freedom ; and other methods or processes appropriate to assuring Contractor performance. The performance assurance system is expected to evolve over the life of this Contract and will be developed and modified by the Contractor as appropriate to reflect NNSA policies and procedures related to corporate governance, NNSA-contractor interfaces, and PPBES.
- (d) The Parties agree to continue their "Partnership for Performance" program to drive performance improvement, reduce cost of operations, streamline oversight practices, apply best business practices to the extent practicable, and provide best-value support and maximum contribution to national interests via scientific and technical excellence.

