

**U.S. Department of Energy
National Nuclear Security Administration
Office of Nuclear Safety and Operations**



FINAL REPORT

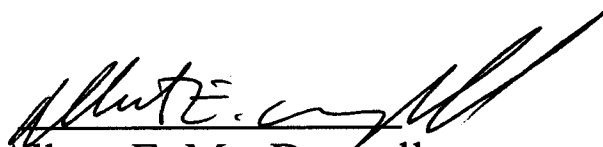
OF THE

**PILOT ASSESSMENT OF THE LOS
ALAMOS NATIONAL LABORATORY
CONTRACTOR ASSURANCE SYSTEM**

**USING THE NNSA DRAFT CAS CRAD DATED
DECEMBER 2008**

APRIL 21, 2009

Signature Page

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Albert E. MacDougall
NNSA Review Team Leader

Executive Summary

1.0 Introduction

This is the final report for the first baseline assessment of the Contractor Assurance System (CAS) at the Los Alamos National Laboratory (LANL). The CAS is intended to ensure compliance and efficient mission accomplishment with respect to applicable laws, regulations, standards, DOE directives, contract requirements, etc. in the areas of nuclear safety; environment, safety, and health (ES&H); safeguards and security; cyber security; emergency management, and business management. The CAS is intended to identify weaknesses/deficiencies and drive improvement through the effective use of operating experience, assessment, worker feedback, issues management, and lessons learned processes.

2.0 Purpose

The assessment of LANL CAS was conducted in accordance with the pilot *Baseline Assessment Plan and Criteria and Review Approach Document (CRAD) for Assessing Contractor Assurance Systems at NNSA Sites*. The review was conducted by a team comprised of federal staff based at other site offices, the NNSA Service Center, and NNSA Headquarters (HQ). The list of team members and team assignments is included in Appendix 4.

This pilot review had three key objectives; first to provide LANL with an independent assessment of CAS implementation; second, provide NNSA HQ with a baseline status of CAS implementation at sites across the NNSA complex; and lastly, to pilot and improve the process for conducting these reviews. A second pilot will take place at the Y-12 Site in May of 2009.

3.0 Review Approach

The team leader conducted a pre-site visit on March 4, 2009 and collected a set of initial documents for the team to review. LANL provided presentations on their CAS, the results of their self assessments, and their continuous improvement and re-engineering activities to address known weaknesses in CAS effectiveness.

The onsite portion of the review was conducted from March 16- 20, 2009. The team reviewed CAS documents including implementing processes and procedures, interviewed workers and supervisors, observed CAS process-related work in the field, and reviewed CAS-related products such as completed assessment reports and performance metrics. The list of documents reviewed, interviews conducted, and observations of CAS-related activities are included in Appendix 4 of this report.

An initial out brief was conducted on March 20, 2009. The final report was drafted and factual accuracy review and resolution was conducted with LANL the weeks of April 6 and April 13, 2009.

The team used the criteria, review, and approach documents (CRAD) included in the *Baseline Assessment Plan and Criteria and Review Approach Document (CRAD) for Assessing Contractor Assurance Systems at NNSA Sites, dated December 2008* to determine whether the following four (4) functional area performance objectives were met:

CAS-1: The contractor has an approved Contractor Assurance System (CAS) process description document that describes a rigorous and credible process for identifying weaknesses and deficiencies, and driving improvement based on effective use of operating experience, assessment, worker feedback, lessons learned, and issues management processes.

CAS -2: Contractor management has established a rigorous and credible CAS assessment program that evaluates and documents the adequacy of programs, processes, and performance on a recurring basis, and effectively uses assessment results as the basis for informed management decisions to improve programs, processes, and performance.

CAS-3: Contractor management has established a rigorous and credible CAS operational awareness program that evaluates and documents operating experience and uses the results of incident reporting, performance measures, worker feedback, and lessons learned programs and processes as the basis for informed management decisions to improve.

CAS -4: Contractor management has established a comprehensive, structured issues management system that provides for timely, integrated, and effective resolution of deficiencies.

The team used the following definitions to categorize the results of the review:

Concern (CON): Failure to meet requirement in criterion with potential near term adverse impact. (Note- A concern is similar to a readiness review pre-start finding)

Issue (ISS): Failure to meet requirement in criterion, or limited implementation of required elements of criterion, with minor or no near term adverse impact. (Note- an Issue is similar to a readiness review post-start finding)

Opportunity for Improvement (OFI): Recommendation to improve effective implementation of supporting CAS processes, CAS inputs and outputs, and/or overall CAS objectives.

The NNSA CAS CRAD included a total of twenty three (23) criteria to evaluate the four performance objectives. The team considered that a criterion was met if there were no concerns or issues identified for the particular criterion. Appendix 1 includes a list of the Concerns, Issues, and Opportunities for Improvement identified during the review.

4.0 Review Results

LANL Self-Assessment

LANL was provided the CRAD used for this review and asked to conduct a self-assessment of CAS implementation with respect to the criteria outlined in the document. LANL used the results of previous CAS program self assessments, primarily the FY 08 CAS self assessment and an external review by one of their Parent Organizations, and a table top review using several of their deployed CAS support personnel, to conduct their self assessment to the NNSA CAS CRAD. LANL documented the results of this review in a report titled, *FY09 CAS Gap Analysis FY09 CAS Gap Analysis Using the Criteria and Review Approach Document for Assessing Contractor Assurance Systems at NNSA Sites*, Dated March 3, 2009. (Note - The LANL self-assessment is referred to in this report as the LANL CAS CRAD GAP Analysis)

The LANL CAS CRAD Gap Analysis included objective evidence that supported meeting the criterion, any potential gaps in meeting the criterion, and any evidence that supported exceeding the criterion for each of the twenty-three (23) criteria in the NNSA CAS CRAD. Then based on criteria established in their internal review plan, LANL evaluated each identified potential gap and determined whether they fully met, partially met, or did not meet each of the criteria based on criteria established in their review plan. During the review, LANL annotated their final report to show the relationship of identified gaps to previously identified issues and opportunities for improvement.

Overall Assessment Team Results

The team determined that fifteen (15) of the twenty-three (23) criteria were met. The team identified no concerns, ten (10) issues, and twenty-five (25) opportunities for improvement.

LANL determined that fifteen (15) of the twenty-three (23) criteria were met and identified (7) of the ten (10) specific issues identified by team in their self-assessment. Two (2) of the three (3) issues not specifically identified by LANL were examples of a broader issue self identified by LANL. Therefore, the team only identified one new issue that had not been identified by LANL. This resulted in criterion 4-3 being rated by the team as not met that LANL had determined was met. Additionally, LANL determined that criterion 1-2 was not met and the team determined this criterion was met. Based on these results the team concluded that LANL provided a thorough and accurate assessment of their implementation of the CAS.

The following is a high-level summary of the conclusions and results for each of the Functional Areas. A complete list of the review results is included in Appendix 1.

Functional Area #1- Contractor Assurance System Documentation

The LANL CAS System Description (SD) describes the overall design, supporting processes, and continuous improvement tools that support LANL meeting the NNSA expectations for CAS. The LANL Annual Contract Assurance letters and the supporting self-assessments indicated that the LANL CAS has been approved and monitored as required by the LANL contract. The LANL CAS SD clearly demonstrates how the CAS system was designed and how the contract H clause requirements, one of which is the CAS, were being met. The team identified several opportunities for improvement during the review that highlighted the need for the LANL CAS SD to more clearly demonstrate compliance with the DOE and NNSA CAS requirements in addition to the contract CAS requirements.

All four (4) criteria were met. The LANL CAS Gap Analysis determined that three (3) criteria were met and that criterion 1-2 was not fully met based on identification of a potential gap with implementation of CAS requirements involving subcontractor work. Six (6) OFIs were identified.

Functional Area #2- Contractor Assurance System Assessments

LANL has a documented assessment process in place, which includes self-evaluations of compliance with various requirements as well as risk-based assessments. There are generally three types of assessments used in support of the program – Independent Assessments, Management Self-Assessments and Management Observations and Verifications. The assessments are used by line management to evaluate and document the adequacy of programs, processes, and performance. The results of the assessments are evaluated to identify needed improvements to programs, processes, and performance. Assessments include corporate audits, third-party certifications, and external reviews by experts that, in addition to validating contractor performance, are used to measure the effectiveness of CAS processes and activities.

The team concluded that the LANL assessment process was adequately documented, was generally being implemented as designed, and was continuously improving. However, deficiencies were identified in the planning, performance, and documentation of assessment results that indicate that NNSA's expectations for the overall assessment process were not being fully met.

Five (5) of the eight (8) criteria were met which agreed with the results of the LANL CAS CRAD Gap analysis. Four (4) issues, all self identified by LANL, and seven (7) OFIs were identified.

Functional Area #3 - Contractor Assurance System Operational Awareness

LANL has implemented a structured, formal program for prompt reporting, analysis, and trending of data from operational events, accidents, injuries, and near misses and to routinely identify and make use of performance measures/indicators that reflect actual

performance in the all the required functional areas. LANL needed to continue improving the selection, analysis, communication, and response to performance measures and indicators to ensure they effectively supported early identification and correction of performance deficiencies.

LANL has implemented a formal process to identify and analyze lessons learned information from external and internal sources, to determine applicability and necessary corrective or preventive actions and to communicate lessons learned to target audiences and potential users. Results of operating experience, worker feedback, and lessons learned activities are formally documented and readily available to DOE and contractor management, including electronic access. Deficiencies were identified in the effectiveness of gathering and applying worker feedback and lessons learned to work activities to prevent repeat or similar problems or occurrences. Several opportunities for improvement were noted related to implementation of lessons learned processes and training of personnel performing CAS support functions across all the various facilities at LANL.

Three (3) out of six (6) criteria were met. This matched the results of the LANL CAS CRAD Gap Analysis. Four (4) issues, two self-identified by LANL and two specific examples of a broader issue self-identified by LANL, and eleven (11) OFIs were identified.

Functional Area #4 - Contractor Assurance System Issue Integration and Management

The LANL Contractor Assurance System Issues Integration and Management processes have been established and are being generally implemented as designed. Program and performance deficiencies, weaknesses, issues, findings, etc., regardless of their source, are entered into the LANL Issues Management Tracking System (LIMTS). The LANL Issues and Corrective Action Management (ICAM) process and the LIMTS tool include all the elements for an effective integrated issues integration and management process. LANL has self identified numerous process improvements and implementation deficiencies that have limited the overall effectiveness of an integrated issues and corrective action management process. LANL has started an ICAM re-engineering project to address some of the ongoing problems caused by the current design of the system as well as continuing to identify and implement opportunities for improvement in ICAM documentation, training, and implementation.

Three (3) out of four (5) criteria were met. The LANL CAS Gap Analysis determined that four (4) of the five (5) criteria were met. Two (2) Issues, one of which was self identified by LANL, and two (2) OFIs were identified. The one new issue identified by the team resulted in criterion 4-3 being rated by the team as not met that LANL had evaluated as met.

5.0 Appendixes

1. List of Review Results
2. Functional Area Detailed Results
3. List of Documents, Interviews, and Observations
4. Review Team Composition

Appendix 1: LIST OF RESULTS- LANL CAS REVIEW***Issues***

ISS CAS 2-2.1 – The LANL assessment planning program document does not explicitly identify the requirement to identify and document the scope and frequency of required assessments as required by DOE O 226.1A. *(Self Identified)*

ISS CAS 2-3.1 – The LANL assessment planning and scheduling process does not ensure that the assessment scope for any single year includes all applicable functional areas, programs, facilities, systems, activities, and organizations including subcontractors. *(Self Identified)*

ISS CAS 2-6.1 – LANL was not consistently conducting causal analyses as required by their internal ICAM process. *(Self Identified)*

ISS CAS 2-6.2 – LANL is not meeting expectations for the timely entering and processing of independent and external assessments results as required by their ICAM process. *(Self Identified)*

ISS CAS 3-1.1 – The LANL Dashboard adverse trend in timely ORPS Categorization (56%) and timely submission of Final ORPS reports (17%) does not support timely trending of operational data. *(Self Identified)*

ISS CAS 3-4.1 – The development of Facility-specific training does not incorporate Lessons Learned to illustrate the relevance of the learning objectives to the worker's work environment per the LANL Conduct of Training Manual.

ISS CAS 3-4.2 – Lessons Learned are not consistently being incorporated into facility level work planning activities as required by the LANL Integrated Work Management (IWM) Document.

ISS CAS 3-5.1 – The LANL IWM process was not being effectively utilized to solicit and incorporate worker feedback in order to improve activity-level work performance. *(Self Identified)*

ISS CAS 4-1.1 – The LANL Issues and Corrective Action Management (ICAM) process does not function as an effective, integrated system to capture performance feedback from all sources, and to facilitate continuous improvement through efficient analysis, resolution, and tracking of identified issues. *(Self Identified)*

ISS CAS 4-3.1 – LANL is not conducting and documenting quarterly analysis of Category 3, 4, and 5 issues for trends as required by their internal ICAM process document.

Opportunities for Improvement

OFI CAS 1-1.1 – LANL should ensure that the revision history for the CAS System Description (SD) is consistent with their internal document control requirements.

OFI CAS 1-2.1 – LANL should consider adding a scope section to and updating the DOE O 226.1A crosswalk in Appendix B-1 of the CAS SD in order to improve the clarity of the flow down of CAS requirements.

OFI CAS 1-3.1 – The CAS SD could be improved by including a specific description of how LANL management obtains and uses operational awareness information throughout the continuous improvement cycle.

OFI CAS 1-3.2 – The CAS SD could be improved by explicitly describing the key management tools used to drive integration at the various process, functional area, and organizational interfaces and integration with other systems such as ISM, QA, and ISSM.

OFI CAS 1-3.3 – The CAS SD should specifically identify worker feedback mechanisms within the supported process section and/or in the integration section of the document.

OFI CAS 1-4.1 – LANL should update CAS-related procedures to reflect the current status of available training courses.

OFI CAS 2-1.1 – LANL should develop steps and or process tools to validate that required assessments identified during the annual assessment planning process and incorporated into the annual assessment plan are accurate and complete.

OFI CAS 2-2.1 – LANL could improve the assessment planning process by developing a tool that clearly defines the subset of assessments (typically referred to as the baseline or core assessments) for each Requirements Area Owner and/or Functional Area Manager.

OFI CAS 2-2.3 – LANL should consider performing a parent organizational peer or benchmarking review to evaluate the use of available management assessments resources across functional areas and the overall ratio of management observations to management assessments and management assessments to independent assessments to determine if there are related goals, metrics, or measures to optimize the effectiveness of the use of available assessment resources.

OFI CAS 2-2.4 – LANL could improve the overall assessment planning process by developing an integrated multi-year planning tool that identifies all required assessments and their associated periodicity to use as a planning template for annual and future assessment scheduling.

OFI CAS 2-3.1 – LANL needed to improve the selection, scope, and conduct of management self-assessments to ensure that they included a balance of compliance-based and performance-based review activities.

OFI CAS 2-4.1 – LANL should consider categorizing Management Observation and Verification activities as an Operational Awareness activity instead of an assessment activity.

OFI CAS 2-8.1 – LANL should encourage all Associate Directors to initiate regular meetings with their Los Alamos Site Office counterparts to discuss in person assessment results, issues, and deficiencies.

OFI CAS 3-2.1 – LANL should initiate activities to enhance consistency in the development and use of measures including an appropriate balance of outcome and overall process/program performance measures to ensure the maximum benefit is realized from the information being collected and analyzed.

OFI CAS 3-3.1 – LANL should formalize site-wide expectations for the identification and use of available trending and analysis information to identify issues, weaknesses, and opportunities for improvement.

OFI CAS 3-3.2 – Facility-level trending and analysis could be strengthened by formally defining expectations for implementing trending analysis at the facility level.

OFI CAS 3-3.3 – LANL should consider using the systematic approach to training to develop a minimum set of competency statements and methods for demonstrating achievement of these competencies for personnel conducting trending and analysis functions.

OFI CAS 3-4.1 – LANL could improve the overall effectiveness of the Lessons Learned program if additional screening is conducted to ensure that Lessons Learned are sent to the smallest possible target group (i.e., crane operators, glove box workers, maintenance, etc.) in addition to or instead of the standard distribution list.

OFI CAS 3-4.2 – LANL should consider identifying the Lessons Learned Point of Contact function in position descriptions in order to improve the implementation of this important function.

OFI CAS 3-4.3 – LANL should consider developing a Facility Lessons Learned Coordinator training plan to improve the consistency and performance of the overall Lessons Learned program.

OFI CAS 3-4.4 – LANL should consider identifying an institutional expectation to develop a facility level Lessons Learned administrative procedure in order to improve the consistency, flow down, and overall effectiveness of facility-level implementation of the Lessons Learned program.

OFI CAS 3-4.5 – LANL should take near term actions to enhance the query capability of LIMTS which would significantly improve the ability to effectively develop and target recipients of Lessons Learned based on trending and analysis of operational issues.

OFI CAS 3-5.1 – LANL could strengthen the visibility of worker feedback by developing a performance metric related to worker feedback.

OFI CAS 3-5.2 – LANL could improve worker feedback by developing formal processes to collect and respond to good catches and recommendations.

OFI CAS 4-2.1 – LANL needs to reduce the time delay between issue identification, entry into LIMTS, categorization, action assignment, and corrective action development.

OFI CAS 4-2.2 – LANL should consider development of an issue lifetime (cradle to grave) metric to facilitate evaluation of overall ICAM system effectiveness.

Appendix 2: Functional Area Detailed Results

CAS-1: Contractor Assurance System Process Description

PERFORMANCE OBJECTIVE:

The contractor has an approved Contractor Assurance System (CAS) process description document that describes a rigorous and credible process for identifying weaknesses and deficiencies, and driving improvement based on effective use of operating experience, assessment, worker feedback, lessons learned, and issues management processes.

DISCUSSION:

CRITERIA:

1-1a. The contractor has developed and formally issued an approved document that fully describes the programs and processes that comprise the CAS.

The LANL CAS is documented in System Description (SD) 320, Revision 1, *LANL CAS Description Document, dated February 2009*. The CAS SD describes the overall design, supporting processes, and continuous improvement tools that support LANL in meeting the NNSA expectations for CAS. The LANL CAS relies on a continuous improvement cycle, which consists of goals, metrics, assessments, improvements, and feedback. There are eight processes (strategic performance improvement, requirements flow down, risk management, measures, assessments, issues and corrective actions, process improvement, and lessons learned) that support execution of the overall system and help ensure that the CAS operates as a single system that integrates requirements, risk, and performance. These processes are documented per the LANL document hierarchy. Supporting the CAS continuous improvement cycle are LANS/LANL governance and NNSA/LASO oversight.

This sub criterion was met.

1-1b. The CAS process description document has been approved in the manner specified in the contractor's prime contract or by the NNSA site office manager.

The H-4 clause of the LANL prime contract states the CAS shall be approved and monitored by the Contractor's Parent Organization. For LANL, this is the LANS Board of Governors. The document was first published in September of 2006 and updated in February of 2008 and February of 2009. The LANL CAS requires an annual assurance letter be sent to the Board of Governors and the NNSA Site Office Manager that states that the LANL CAS is compliant with contract requirements, is operating as designed, and is continuously improving. The basis for this letter is an annual CAS self-assessment. The team reviewed the FY 2007 and 2008 Annual Assurance letters and the supporting self-assessments and concluded that the LANL CAS has been approved and monitored as required by the LANL contract and the CAS SD.

This sub criterion was met.

1-1c. The Site Office Manager is kept informed of any subsequent updates to the CAS process description that involves significant changes in accordance with normal site approval and configuration control processes.

The H-4 clause of the prime contract requires that the CAS include a process for notifying the Contracting Officer of significant assurance system changes. The LANL CAS configuration management process is described in the system sustainability section of the CAS SD. Formal change control is applied when there are proposed changes to the elements of CAS or supporting processes, or when changes are required to adjust to changing conditions. Table 3 of the CAS SD describes the change control responsibilities, including notification of the NNSA Los Alamos Site Office (LASO) Manager for all changes. The CAS SD was first published in 2006 and revised in 2008 and in 2009. Notifications were made via letters from the LANL Contract Assurance Officer to the LASO Manager for the original submittal and the two subsequent updates. The LANL Annual Assurance Letters to DOE Site Office Manager indicate that Site Office is kept informed of changes to the CAS Description Document.

The team noted that the CAS SD included an acronym list and document change history at the end of the document. This section included a summary of changes for the last two revisions (February 2008 and February 2009) but did not include the original submittal in September of 2006. The team subsequently concluded that LANL should ensure that the revision history for the CAS SD is consistent with their internal document control requirements for a system description document. **(OFI CAS 1-1.1)**

This sub criterion was met. The overall criterion was met. One (1) OFI was identified.

1-2. The scope of the contractor's CAS specifically includes nuclear safety; environment, safety, and health (ES&H); safeguards and security; cyber security; emergency management; and business management processes and programs, and requires routine evaluation of work performed under their contract in these areas, including the work of subcontractors.

The LANL prime contract requires that the CAS system applies to all work at the site, which is inclusive of the six areas identified in DOE O 226.1A and the NNSA supplemental directive, including the work of subcontractors. The LANL CAS SD includes a crosswalk that describes how the system addresses both the contract requirements in the H clauses and the DOE O 226.1A and NNSA requirements for CAS. (Note - the NNSA 226.1 Supplemental Directive adds business management processes that are not identified in the DOE Order.) The crosswalk points to the sections that implicitly describe the scope of the CAS system to include all work at LANL. Table C-1 of the LANL CAS SD, *Prime Contract statement of work systems and supporting systems*, includes all LANL work areas and enabling systems and processes. The enabling systems include all the required CAS functional areas of nuclear safety; environment, safety, and health (ES&H); safeguards and security; cyber security;

emergency management; and business management. During factual accuracy review, the team was informed that the integration section of the CAS SD on page 10 included the following statement “This integration also applies to other systems as shown in Table C-1 (pg. 37). This ensures that the CAS covers all work performed under the LANL Prime Contract, including the work of subcontractors.” The team concluded that this statement, although not referenced in the DOE O 226.1A crosswalk in Table B-1, explicitly states that the scope of the LANL CAS to include all work including the work of subcontractors.

LANL noted in the FY 09 CAS GAP Analysis (conducted using the NNSA CAS CRAD) that routine evaluation of subcontractor work was not consistently performed as required by their implementing procedures. This was identified during an institutional assessment of subcontractor safety across LANL. The subcontractor safety assessment found that oversight was in place for construction and environmental subcontractors, and partially in place for maintenance and the balance of subcontractors. The assessment team also determined that relevant requirements were being flowed to subcontractors and that although there were gaps in implementation of the requirements, subcontractor work was being safely performed. As a result, LANL concluded that they “Partially Met” this criterion in the FY 09 CAS GAP Analysis.

The team concluded that the LANL CAS SD includes all the required elements of DOE O 226.1A including the work of subcontractors. However, LANL should consider adding a scope section to the CAS SD and updating the DOE O 226.1A crosswalk in Table B-1 in the CAS SD in order to improve the clarity of the flow down of CAS requirements. **(OFI CAS 1-2.1)**

This criterion was met. One (1) OFI was identified.

1-3a. The CAS methodology and approach focus on using thorough and accurate operational awareness, assessment, and issues management process information to identify weaknesses/deficiencies and opportunities for improvement, and to subsequently develop and execute actions that lead to improved performance.

The LANL CAS SD includes the use of assessment, issues management, and improvement tools to drive continuous improvement through the use of an effective feedback loop. The feedback loop for weaknesses and deficiencies is performed through the Issues and Corrective Action Management Process and the LANL Issues Management Tracking System (LIMTS). The feedback loop for opportunities for improvement is through the lessons learned process, improvement tools such as Lean Six Sigma, and adjustments to goals and objectives.

The team noted that although the CAS SD does not explicitly describe operational awareness activities, they are included in implementing processes and expectations within the four prime elements of the CAS SD document (Goals, Metrics, Assessments, and Improvements). These include Management Observation and Verification (MOV) used to evaluate work activities at the floor level and implementation of lessons learned

and corrective actions, management review boards, and review and analysis of metrics, measures, and goals. The team noted that the CAS SD could be improved by including a specific description of how LANL management obtains and uses operational awareness information throughout the continuous improvement cycle. **(OFI CAS 1-3.1)**

This sub-criterion was met.

1-3b. The CAS SD describes the various types of CAS assessment and operational awareness activities and how they are integrated and used to achieve meaningful and effective performance improvement.

Figure 1 of the LANL CAS SD provides a high level of description of how information such as goals, objectives, metrics, results of assessments, and improvements are integrated to drive continuous improvement. The CAS SD provides more detail of each of these four areas and the eight supporting processes, including the assessments and issues and corrective action processes. The team noted that the CAS SD had an integration section that was intended to address how CAS is integrated with other required systems such as Integration Safety Management (ISM), Quality Assurance (QA), and Integrated Safeguards and Security Management (ISSM). However, this section of the CAS SD did not describe in detail how CAS integrated with these other systems and did not include a description of all the management tools used to drive integration at the various process, functional area, and organizational interfaces. The team observed some of these integration mechanisms during the review such as the various levels of management review boards (institutional, associate directorate, and directorate level), Director's Action List meeting, and management review of Dashboard measures. The team noted that these management integration tools appeared to be effective. However, as noted above, neither the CAS SD nor the implementing program description documents and supporting process procedures provided a detailed description of how key management tools were used to support the overall integration of programs and processes into the LANL CAS. The team subsequently concluded that the CAS SD could be improved by explicitly describing the key management tools used to drive integration at the various process, functional area, and organizational interfaces and integration with other systems such as ISM, QA, and ISSM. **(OFI CAS 1-3.2)**

This sub-criterion was met.

1-3c. CAS activities specifically discussed include the evaluation of operating incidents and injuries; performance indicators/measures; lessons learned; worker feedback; and results from various types of assessments.

The LANL CAS SD includes sections describing performance measures/indicators, lessons learned, and assessments. Information regarding operating incidents and injuries is described within the lessons learned element of the LANL CAS. The details of the lessons learned process and supporting systems and tools is described in CRAD CAS-3, *Contractor Assurance System Operational Awareness*. The LANL Operating Experience

Program Description PD 323 captures and applies lessons taken from operating experience in order to avoid repeat occurrence.

The team noted that worker feedback mechanisms are not explicitly identified in the CAS SD document. They are implied in the section on issues management, where it states that workers are encouraged to identify and report issues, and in the lessons learned and risk process descriptions where there are process blocks to conduct lessons learned following work activities. However, neither of these sections nor the integration section of the CAS SD explicitly describes the mechanisms used to collect and respond to worker feedback. The team noted in CAS CRAD 3 that although worker feedback mechanisms are in place, they are not being effectively implemented. See ISS CAS 3-4.2 and ISS CAS 3-5.1

The team subsequently concluded that the CAS SD should specifically identify worker feedback mechanisms within the supported process section and/or in the integration section of the document. **(OFI CAS 1-3.3)**

This sub-criterion was met.

1-3d. The CAS SD describes how the issues management process is used to manage improvement actions.

The LANL CAS SD includes a general description and a process flow chart and description of the LANL Issues and Corrective Action Management (ICAM) process. This section refers to the institutional procedure for implementing the LANL ICAM process. The tool used to support the LANL ICAM process is called the Los Alamos Issues Management Tracking System (LIMITS). The CAS CRAD 4 includes the detailed evaluation of the LANL ICAM process.

This sub-criterion was met.

1-3e. Types of assessments include self-assessments, management assessments and walk-throughs, internal independent assessments of contractor performance, and assessments used to measure the effectiveness of CAS processes and activities (e.g., corporate audits, third-party certifications, and external reviews).

The CAS SD provides an overview of LANL assessment program. LANL uses three types of assessments: management observation and verification (MOV), management assessment, and independent assessment. The CAS SD and assessment program incorporates the use of peer assist and external parent organization assessments to evaluate and measure the implementation and effectiveness of CAS and supporting CAS elements. The team was provided recent Parent Organization Functional Management Assessments (POFMA) and Directors Institutional Assessments that evaluated both the entire CAS and selected portions of CAS. Lastly, the CAS SD includes a section listing third party certifications that have been obtained or are currently being pursued. For example, LANL's Environmental Management System (EMS) was certified in March of 2006 as ISO 4001 compliant and LANL is pursuing certification under OSHA's Voluntary

Protection Program (VPP) in June of 2009. See CRAD CAS 2, *CAS Assessments*, for additional details with respect to implementation and use of assessments.

This sub-criterion was met. The overall criterion was met. Three (3) OFIs were identified.

1-4a. The contractor has established clear and unambiguous lines of responsibility and authority for performing CAS functions and activities, and assigned personnel are adequately trained and qualified and possess experience, knowledge, skills, and abilities commensurate with their responsibilities.

The LANL CAS SD clearly identifies line management responsibility for executing CAS functions such as establishing goals and metrics, conducting assessments, issues and corrective action management, conducting improvement activities, and overall feedback. The CAS SD also includes process diagrams that provide evidence that various organizations have responsibilities and accountability for performing supporting process activities.

The Requirements Management System (RMS) requires that Roles and Authorities be clearly identified in section 4 of all implementing documents such as Program Description documents and Procedure documents. The team reviewed a sample of the core implementing process documents as Assessments, Issues Management, and Lessons Learned procedures and noted that section 4 included the responsibilities of Laboratory Director, Associate Directors and employees related to CAS functions and activities.

Personnel assigned to the Contractor Assurance Office (CAO), including deployed CAO staff to line management, have duties and responsibilities identified in their position description documents.

This sub-criterion was met.

1-4b. The contractor has established and maintains appropriate qualification standards for these personnel.

Personnel assigned to the CAO have duties and responsibilities identified in their individual position description document. From the position description, a training plan is developed. The team reviewed the training plan for the Contractor Assurance Specialist and Contractor Assurance System Deployed Specialist. The plans reflect the various training methods (required reading, formal class training, on-the-job training, etc) for each of the main CAS functions (goals, metrics, assessments, issues and corrective action, and feedback and improvement).

Training and qualification requirements for certain CAS functions that require a unique skill such as conducting assessments are identified in the individual procedures. For example, Section 5 of Procedure P328-2, *Independent Assessment*, Procedure P328-3, *Management Assessment*, and Procedure P328-4, *Management Observation and*

Verification, identifies required or recommended training courses depending on the role or function. Training was developed using a graded approach to the systematic approach to training per procedure P781-1, *Conduct of Training Manual*. For example, P328-3, *Management Assessments*, identifies two required courses (Management Assessment Overview, and Conducting Management Assessments) for Managers, CAO-Deployed Personnel, and Management Assessment Team leaders and Team members. For each of these procedures, the specific training classes are listed as “Training to be developed”. Each of the procedures states in section 5 that “Persons in the following positions must receive training specific to this procedure within 6 months of development of the training.”

The team noted that many of the training courses have been developed and personnel have been trained as required. For example, a review of course completion data shows that 14 sessions of Independent Assessment Skill Training and 69 sessions of Conducting Management Assessment were completed during the 2006 to 2009 time period. The team noted that LANL should update CAS-related procedures to reflect the current status of available training courses. **(OFI CAS 1-4.1)**

This sub-criterion was met. The overall criterion was met. One (1) OFI was identified.

SUMMARY OF RESULTS

The LANL CAS System Description (SD) describes the overall design, supporting processes, and continuous improvement tools that support LANL meeting the NNSA expectations for CAS. The LANL Annual Contract Assurance letters and the supporting self-assessments indicated that the LANL CAS has been approved and monitored as required by the LANL contract. The LANL CAS SD clearly demonstrates how the CAS system was designed and how the contract H clause requirements, one of which is the CAS, were being met. The team identified several opportunities for improvement during the review that highlighted the need for the LANL CAS SD to more clearly demonstrate compliance with the DOE and NNSA CAS requirements in addition to the contract CAS requirements.

All four (4) criteria were met. The LANL CAS Gap Analysis determined that criterion 1-2 was not fully met based on identification of a potential Gap with implementation of CAS requirements involving subcontractor work. Six (6) OFIs were identified.

Opportunities for Improvement:

OFI CAS 1-1.1 – LANL should ensure that the revision history for the CAS system description (SD) is consistent with their internal document control requirements for a system description document.

OFI CAS 1-2.1 – LANL should consider adding a scope section to and updating the DOE O 226.1A crosswalk in Table B-1 in the CAS SD in order to improve the clarity of the flow down of CAS requirements.

OFI CAS 1-3.1 – The CAS SD could be improved by including a specific description of how LANL management obtains and uses operational awareness information throughout the continuous improvement cycle.

OFI CAS 1-3.2 – The CAS SD could be improved by explicitly describing the key management tools used to drive integration at the various process, functional area, and organizational interfaces and integration with other systems such as ISM, QA, and ISSM.

OFI CAS 1-3.3 – The CAS SD should specifically identify worker feedback mechanisms within the supported process section and/or in the integration section of the document.

OFI CAS 1-4.1 – LANL should update CAS-related procedures to reflect the current status of available training courses.

CAS-2: Contractor Assurance System Assessments**PERFORMANCE OBJECTIVE:**

Contractor management has established a rigorous and credible CAS assessment program that evaluates and documents the adequacy of programs, processes, and performances on a recurring basis, and effectively uses assessment results as the basis for informed management decisions to improve programs, processes, and performance.

DISCUSSION:**CRITERIA:**

2-1. CAS assessments include self-evaluations of compliance with applicable laws, regulations, national standards, DOE directives, DOE-approved plans and program documents (e.g., security plan and quality assurance program), site-specific procedures/manuals, contract performance objectives, and other contractually mandated requirements in the areas of nuclear safety; environment, safety, and health (ES&H); safeguards and security; cyber security; emergency management, and business management processes.

PD328, *LANL Assessment Program*, provides a high level overview of LANL's Assessment program and defines the processes to plan, conduct and document assessments. It also summarizes the relationship between assessment processes and other LANL Contractor Assurance System (CAS) management system processes.

The purpose section of PD 328 states that an assessment is an important tool used by managers at the Laboratory to fulfill and monitor the explicit requirements for managing high-consequence activities, including ensuring institutional compliance with the following DOE requirements: DOE O 226.1A, *Implementation of Department of Energy Oversight Policy*, 10 CFR 830, *Nuclear Safety Management*, 10 CFR 851, *Worker Safety and Health Program*; DOE O 414.1C, *Quality Assurance*; DOE M 450.4-1, *Integrated Safety Management System Manual*; DOE O 450.1A, *Environmental Protection Program*; DOE O 470.2B, *Independent Oversight and Performance Assurance Program*; DOE O 151.1C, *Comprehensive Emergency Management System, Chapter X, Readiness Assurance (Sections 1-3)*; DOE O 205.1A, *Department of Energy Cyber Security Management*; and DOE P 470.1, *Integrated Safeguards and Security Management (ISSM) Policy*.

Expectations for planning assessments are contained in P328-1, *Annual Assessment Plan (AAP) and Integrated Assessment Schedule (IAS) Development and Maintenance*. P328-1 describes a five (5) stage assessment planning process. The first stage is for the Associate Directors to prepare their AAP. Stage 2 involves integrating the individual AD AAPs across the Principal Associate Directorate (PAD). Stage 3 involves integrating the PAD AAPs across the entire Laboratory. Stage 4 involves approval of the Laboratory wide AAP and then development and approval of Laboratory integrated assessment

schedule (IAS) from the Laboratory wide AAP. The last stage is to enter all the assessments in the LANL IAS into LIMTS.

The first step of Stage 1 requires that the AD list any assessments that their organization is obligated to perform, without consideration of risk. This includes any assessments required by law, DOE, NNSA's orders and directives, or customer/management commitments, or reoccurring assessments (annual, bi-annual, etc.).

The team reviewed some of the AD level AAPs developed in the first stage of the assessment planning process and interviewed a group of CAO deployed staff that assisted with the development of their supported AD AAP. The team noted based on these interviews that the AD level AAPs were developed by soliciting input from the requirements area owners (RAO) or the functional area owners within the AD. The team also reviewed the list of assessments for some ADs such as Environment, Safety, Health and Quality (ESH&Q) and safeguards and security (S&S). Based on this review, and discussions with the CAO deployed staff, the team determined that there was a reasonable level of confidence that the RAO could identify an accurate set of required assessments in their particular area. This was based on the fact that the RAO is considered as the subject matter expert (SME) in their area and that the requirements which apply to their assigned area are relatively stable. Additionally, in these areas, it was likely that the RAOs were using an established tool to identify and ensure completion of assessments.

In contrast the team noted that in areas where requirements may be changing rapidly (such as cyber security) or are being implemented across many organizations with the potential for different levels of interpretation it was more likely that some assessments may not be properly identified. Additionally, there was a possibility that due to more variables in these cases the RAOs could be overly conservative and identify required assessments that may not actually be required. Identification of unnecessary "required assessments" limits the resources that could be applied to reviewing other high risk areas that were not being assessed due to resource constraints.

The team noted that although the de-centralized and expert based approach to assessment planning used by LANL ensures ownership by line management at the various levels, there is not a system or process check at either the front end (such as providing a baseline list of assessments during the first step of the planning process) or at the back end to provide a higher level of confidence that all the required assessments have been identified. Additionally, although there is an inherent incentive for line managers to ensure that assessments related to goals, commitments, and performance based contract incentives are included in the planning process, the institution does not provide a tool to aid managers in ensuring these types of assessments are included in the assessment planning process. The team subsequently concluded that LANL should develop steps and or process tools to validate that required assessments identified during the annual assessment planning process and incorporated into the annual assessment plan are accurate and complete. **(OFI CAS 2-1.1)**

LANL identified the following potential gap related to this criterion in the FY 09 CAS Gap Analysis:

- Not all directorates selected assessments using the Assessment Selection Tool for FY09. These directorates used other mechanisms and documented their results using the tool.

This was identified as OFI in the FY08 CAS Self-Assessment, was screened by the MRB as an OFI, and was included in FY09 Annual Assessment Selection Process Improvement Plan. The team noted that LANL's categorization of this potential gap as an OFI appears to be appropriate. LANL concluded that this criterion was fully met in their gap analysis.

The team noted that the above gap identified by LANL indicates that the assessment planning tool may not be effective in providing Line Management with a comprehensive set of requirements that need to be periodically assessed. This supports the team's conclusion that the planning tools should be revised as noted in the OFI CAS 2-1.1 above. Additionally, the team noted several other possible improvements to the planning tool associated with the review of the remaining assessment related criterion. (See OFI CAS 2-2.1 and CAS 2-2.4 and Issue CAS 2-2.1)

This criterion was met. One (1) OFI was identified.

2-2a. Assessments are formally planned and performed on a recurring basis at frequencies established based on risks, significances, hazards, uniqueness and complexities, past performances, standards and regulations, and the potential consequences of failing to meet the assessment criterion and associated requirements.

LANL performs a significant number of assessments as evidence by review of the past year and planned assessments for FY09. Over 600 assessments were completed in FY08 and over 300 are currently scheduled for FY09. The assessments are grouped into requirements (both internal and external) and risk-based assessments. Currently the requirements assessments comprise about 62% of the total assessments completed in FY08. The FY08 Parent Oversight Functional Area Management assessment of CAS documented that both the number and ratio of requirements to risk based assessment was higher than what is typically expected based on experience but that the overall number and ratio is moving in the right direction (number of overall assessments and the ratio of compliance to risk-based assessments is decreasing.) Based on interviews with CAO personnel, LANL senior management believed that a significant number of assessments were being identified based on overly conservative interpretation of requirements or incorrect application of assessments. The team subsequently concluded that LANL could improve the assessment planning process by developing a tool that clearly defines the subset of assessments (typically referred to the baseline or core assessments) for each Requirements Area Owner and/or Functional Area Manager. **(OFI CAS 2-2.1)** This type of tool would enable the AD and PADs to focus more of their assessment planning resources on the analysis of risk, hazards, complexity and performance in order to

identify a more informed set of risk based assessments. Additionally, identifying the set of baseline assessments in advance, which would need to be validated by the RAO and or functional area manager, would enable line management to more accurately identify the available resources for conducting the risk based assessments.

The NNSA Draft CAS CRAD included in the lines of inquiry the following types of assessments that the NNSA expected contractors to perform on a recurring basis:

- Periodic assessments of activity level work control in accordance with the *Assessment Criteria and Guidelines for Performing Assessments of Incorporation of Integrated Safety Management and Quality Assurance Principles Into Activity Level Work Planning and Control at NNSA Sites*, dated January 23, 2006, reference DNFSB Recommendation 2004-1
- *Model Assessment Criteria and Guidelines for Performing Phase II Assessments of Safety Systems at Defense Nuclear Facilities*, dated November 30, 2001
- *Criteria and Guidelines for Assessing Documentation and Implementation of Specific Administrative Controls at NNSA Sites*, dated June 9, 2008.

The team reviewed the completed and planned list of assessments in both FY 08 and FY 09 to determine whether assessments were completed or scheduled in each of the above areas and whether there was a mechanism in place to ensure these types of assessments were performed on a recurring basis.

In the area of activity level work control, the team noted that in FY 08 LANL conducted several integrated work management (IWM), management assessments across numerous directorates. The FY 08 Directorate Level Integrated Safety Management Assessment (ISMA) reviewed the effectiveness of these IWM assessments as part of PBI 14.4.1, Implementation of work control. However, the assessment planning tool did not list activity level work control or IWM assessments for selection as either a required assessment (with guidelines on selecting frequency and depth of the assessment based on performance) or as a risk-based assessment.

In the area of vital safety system assessments (VSS), the team noted that LANL had conducted and scheduled VSS assessments in both FY 08 and FY 09. Additionally, the system engineering program was evaluated in the FY08 ISMA and will be evaluated in FY 09 during planned readiness assessments and during the CMR Facility Centered Assessment (FCA). The FCA is a specific type of Director level independent assessment and is discussed in more detail in criterion 2-3b. The team also noted that the assessment planning tool included VSS assessment. The team noted that performing VSS on all SC and SS SSCs was an incentivized contract commitment.

In the area of Specific Administrative Controls, the team noted that implementation of SACs was required to be validated as part of the Independent Validation Review (IVR) process for implementation of any changes to the Documented Safety Analysis and Technical Safety Requirements. Periodic assessments of the ongoing implementation of SACs and administrative controls are conducted as part of the FCA when they are

performed. However, the team was not able to identify a requirement for line management to consider evaluating implementation of SACs on a recurring basis in the assessment planning tool.

Based on the above, the team concluded that the LANL planning tool does not explicitly include evaluation of activity level, work control or implementation of SACs as a potential risk based assessment. This specific example supports the team's overall conclusion that the LANL assessment planning process is expert based. The assessment planning process and tool is reliant on expert based knowledge to self identify and populate the frequency of assessments (based on requirements) and scope (depth and breadth) of that information within the assessment planning tool. (See discussion in criterion 2-2b below and resulting Issue CAS 2-2.1)

The team reviewed the process for establishing the risk based assessments in the FY09 IAS. Each directorate developed a schedule which was presented to the Director. These schedules were then integrated to form the IAS for the year as described in criterion 2-1 above. This 5 stage planning process involves developing an integrated schedule at the AD level and then integrating the AD schedules at the PADs level and then across the laboratory. The second step of the first stage of the planning process is to prioritize the selected risk-based assessments. This is done using a tool which takes into consideration risks and the worst case consequence associated with each area of concern, action(s) planned or underway to manage the risks, the likelihood that the action(s) will successfully manage the risk, and whether or not an assessment will improve the likelihood of success in managing the risk. Based on the ADs input (which is done under mentorship of the CAO) a risk score is self generated by the tool. The risk score provided is then used by the AD to prioritize the assessments.

The third step is to integrate required and risk-based assessments. In doing so, assessments and risk-based assessments are evaluated to eliminate redundancies. The assessments are once again sorted and prioritized, and the AD then prepares an executive summary for the draft APP, this is then submitted to their PAD for completion of Stage 2 of the planning process.

Under Stage 2, CAO-PF and CAO-D work with the PADs and ADs to review the executive summaries and draft APPs to integrate and prioritize the plans within the PADs. After this meeting, AAPs are updated by the ADs if needed. After completion, CAO-PF and CAO-D coordinate the integration of the draft AD AAPs into a Laboratory AAP as part of Stage 3. After the Laboratory AAP and IAS are coordinated and drafted, it is reviewed and approved by the Director and forwarded for LIMTS integration as part of Stage 4 and 5.

The team reviewed the various presentations used during the assessment planning process described above and noted that the linkage between risk and past performance was not consistently documented. Additionally, in the selection of the number and types of assessments there was not a clear bias toward the higher hazard facilities and operations. There was not a clear relationship between areas demonstrating numerous issues (poor

performance) and the focused assessments directed in these areas. The team noted that a direct relationship between the number of issues and a conclusion that this indicates a high risk is not always warranted due to numerous additional considerations; however, the inputs and analysis used to make a decision as to whether additional assessment was warranted was not documented. This example supports the team's overall conclusion that the LANL assessment planning process does not include specific expectations for documenting the basis for selection of the frequencies and scope (depth and breadth) of both required and risk based assessments. (See discussion in criterion 2-2b below and resulting Issue CAS 2-2.1)

The team noted that there was not a consistent balance and ratio of management observations to management assessments, and management assessments to independent assessments. Additionally the team noted that there were a large number of assessments in the business area compared to some areas with high hazards to the public and worker. The team noted that the balance and ratio of types of assessments performed was likely influenced by the particular functional area, level of performance, consequence (Hazard), and overall risk. The team subsequently recommends that LANL consider performing a parent organizational peer or benchmarking review to evaluate the use of available management assessments and resources across functional areas and the overall ratio of management observations to management assessments, and management assessments to independent assessments to determine if there are related goals, metrics, or measures to optimize to effectiveness of overall assessment resources. **(OFI CAS 2-2.3)**

This sub-criterion was not met. One OFI and two (2) supporting examples for Issue 2-2.1 described in sub-criterion 2-2.b below were identified.

2-2b. The basis for assessment frequencies is documented.

While the processes used to develop the IAS as noted above did give evidence of some level of prioritization, the LANL governing CAS documents did not require the inputs, analysis, and basis for these types of decisions to be documented. DOE O 226.1A requires that the scope and frequency of assessments must be specified in site plans and program documents and must ensure that the assessments required by applicable DOE directives are being performed. To meet this performance objective it is necessary to have a comprehensive understanding of all the assessments driven by requirements which must be covered on some defined periodicity. However, the team noted that LANL did not provide evidence during the review that they had a comprehensive integrated planning tool that identified all "required assessments" and their associated periodicity. The team subsequently concluded that the LANL assessment planning program document does not explicitly identify the requirement to identify and document the scope and frequency of required assessments as required by DOE O 226.1A. **(ISS CAS 2-2.1)** This deficiency is categorized as an Issue since it does not have any near term adverse impact in the related CAS functional area.

The team further noted that the overall assessment process could be improved by developing an integrated multi-year planning tool that identified all required assessments

and their associated periodicity to use as a planning template for annual and future assessment scheduling. (OFI CAS 2-2.4) See also related OFI CAS 2-2.1.

LANL determined in the CAS CRAD Gap analysis that the basis for determining assessment frequency was not presently documented in the LANL procedure or supporting tool. This was characterized as an OFI and incorporated into the assessment selection process improvement plan. Based on this potential Gap LANL determined that this criterion was not fully met

This sub-criterion was not met and the overall criterion was not met. One Issue, which was self identified by LANL, and four (4) OFIs were identified.

2-3a. Rigorous self-assessments are performed at all levels to determine the implementation status and effectiveness of policies, programs, requirements, and standards.

The CAS program for LANL schedules and completes a large number of assessments (over 600 in FY08). A limited review of these assessments indicated that they were thorough and addressed the specified issues in a systematic manner.

The team conducted a detailed review of twenty (20) completed assessment reports. The team noted that the review approach, discussion, and results for most of the reports were focused on a review of documentation with a limited discussion of results based on direct observations of the conduct of work. The team did not observe the conduct of assessments during the review due to time constraints. The team also noted that the assessments generally demonstrated the required rigor in evaluating the subject and scope of the assessment with the exception of the limited direct observations noted above. The assessments routinely assessed results against requirements which were well referenced and were captured from a broad range of input documents. Assessments ranged from high level assessments conducted by the parent organization down to management observation and verification. The team noted that the assessments reviewed spanned the spectrum and covered all levels.

The team further noted that LANL considered management observation and verification (MOV) activities as a type of assessment that by design was focused on direct observation of work in the field. LANL noted in their self evaluation that Management Observations were the identified source for 358 issues entered into LIMTS during that period (11.6%) with all directorates represented as using this issue source. This indicates that MOVs are being performed and improvement items were being identified based on direct observation of work. However, the team was not able to review documentation of completed MOVs or observe any MOV activities in progress due to time constraints. Additionally, the team reviewed a sample of independent assessment reports and noted that these generally included an appropriate balance of documentation review and performance based observations of work.

Based on the above, the team concluded that LANL needed to improve the selection, scope, and conduct of management self assessments to ensure that they included a balance of compliance-based and performance-based review activities. **(OFI CAS 2-3.1)**

This sub-criterion was met. One OFI was identified.

2-3b. The scope of the assessments includes all applicable functional areas, programs, facilities, systems, activities, and organizations including subcontractors.

The CAS Assessment schedule for 2009 was reviewed to assess these criteria. There were a large number of assessments scheduled for FY09. The scheduled assessment covered a very broad range of functional areas, programs, systems, and specific activities. Facility Centered Assessments (FCA), which are a specific type of Director Level institutional assessment, were reduced in FY 08 to allow a period of time for the nuclear and high hazard facilities to fully implement established formality of operations requirements. As a result, LANL did not perform any FCA in the Nuclear and High Hazard Facilities in FY 08. Based on concerns from external stakeholders (NNSA and DNFSB), LANL has scheduled one FCA in FY 09 at the Chemical Metallurgical Research (CMR) Facility in FY 09. LANL planned on conducting a FCA at the several nuclear facilities in FY 09, but decided to utilize the scheduled readiness assessments at the radioactive liquid waste treatment facility and at Area G to assess compliance to formality of operations requirements instead of conducting a FCA. The team noted this was a reasonable decision; however, the basis for this decision needed to be documented as noted in the previous criterion discussion and related Issue CAS 2-2.1. With the exception of the not performing any facility centered assessments in FY 08, the team concluded that both the FY 08 and FY 09 assessments covered a broad range of programs, systems, activities, and organizations.

The team reviewed twenty (20) completed assessments. Some of these assessments covered and assessed activities conducted by subcontractors on the site, though due to the sample size it was not possible to determine if the spectrum of subcontractor activities was covered. The contractor identified a potential gap related to conducting required assessments of subcontractor work in criterion 1-2.

The LANL CAS CRAD Gap Analysis identified the following four potential gaps related to this criterion:

- The FY 07 baseline measurement of management assessment report quality found variability that may indicate that these assessments may not all meet expectations for rigor expressed in the procedure. This determination was reinforced by the 2007 HSS Inspection of LANL. (Tracked in FY 08 CAS Management Self-Assessment as LIMTS # 2008-3482 and CAP for HSS Finding D-8 as LIMTS # 2007-6282)
- The Assessment scope for any single year does not always include all applicable functional areas, programs, facilities, systems, activities, and organizations including subcontractors. (Tracked in CAP for HSS 2007 Finding D-9 as LIMTS # 2007-6283)

- There is little evidence that assessments provide formal feedback on the effectiveness of policies, programs, requirements, and standards to requirements Issuing Authorities or requirements Responsible Line Managers. (Tracked in CAP for HSS 2007 Finding D-9 as LIMTS # 2007-6283)

Based on these previously identified issues LANL concluded that this criterion was not fully met. The team subsequently concluded, based on both independent analysis and review of above gaps identified by previous external assessments, that the LANL assessment planning and scheduling process does not ensure that the assessment scope for any single year includes all applicable functional areas, programs, facilities, systems, activities, and organizations including subcontractors. **(ISS CAS 2-3.1)**

The team determined that since this deficiency was fundamental to an effective assessment process and that actions to correct this deficiency had not been completed, this deficiency identified by LANL should be carried forward by the team as an Issue. This deficiency was categorized as an Issue since it was a clear requirement in the criterion that did not have any near term adverse impact.

This sub-criterion was not met. The overall criterion was not met. One Issue, self identified by LANL, was identified.

2-4. A comprehensive suite of assessments is scheduled and performed, including self-assessments (or management assessments), management walk-throughs, and internal independent assessments performed by personnel having sufficient independence from line management to ensure unbiased results.

LANL has 343 total planned assessments in FY 09 consisting of: 126 Independent assessments, 203 Management Assessments, and 9 Vital Safety System Assessments. In FY 08 LANL identified 540 assessments in LIMTS. Out of the 540 assessment, 426 assessments were closed, 43 are in progress, and 71 still scheduled. Of the 71 still scheduled 48 were completed, 6 are in progress, 7 were moved to FY 09, 5 were deleted or cancelled, and 5 are still scheduled.

The team noted that although LANL considers MOVs as a type of assessment, they do not require MOVs to be included in the AAP/IAS since they are performed in a real time by line managers to sustain awareness of and identify any emerging risks associated with current work activities. Additionally, although considered a type of assessment, the LIMTS tool does not provide an effective method for documenting the results of completed MOVs. LANL has identified this weakness and is working to identify a more effective manner of capturing MOV information as part of the ICAM re-engineering project (see CRAD 4 for details on ICAM re-engineering). The team recommends that LANL should consider categorizing MOVs as an Operational Awareness activity instead of an assessment activity. **(OFI CAS 2-4.1)** This would allow a less rigor in the planning, conduct, and documentation of the MOV activities that what is typically required for an assessment.

For FY 09, LANL has a variety management assessments scheduled by the Facility Operations Directors (FOD) including: Electrical Safety – FODs, Risk Analysis Type I MSA, Abnormal Event Notification within the FOD, Process Design, Equipment Installation, Quality Assurance Program, Measuring and Test Equipment Program, Maintenance Process, and Radiation Control. The scope of the listed assessments appears to focus on activity level hands-on work and process implementation. Scheduling of this type and number of activity level management assessment is an improvement and should be continued. However, LANL needs to ensure through training and process improvements that the actual conduct of these assessments includes direct observation of field work (see discussion in criterion CAS 2-3 and Issue CAS 2-3.1).

Based on a review of the assessment planning process (described in criterion 1 and 2) and a review of the types of assessments identified in the FY 09 IAS the team concluded that LANL scheduled a comprehensive suite of assessments in FY09.

P 328-2, *Independent Assessment*, establishes criteria to ensure that personnel performing independent assessments have sufficient independence from line management to ensure unbiased results. Assessors are considered independent if they are free from bias due to the potential for self-interest or gain from a particular assessment outcome; and/or due to an unbalanced professional perspective towards the work activities, processes, systems, and/or organizations being assessed. Bias due to self-interest and or the potential for gain can result from organizational affiliation and/or a host of other factors.

LANL identified the following potential GAP in the CAS CRAD Gap Analysis for this criterion:

- It is unclear if all independent assessments included in the FY 09 scheduled have sufficient independence from the line management to ensure unbiased results. It is essential that individuals performing an independent assessment have sufficient independence. Without independence, the assessment outcome could be useless or even damaging.

LANL categorized this potential GAP as a new OFI and determined that this criterion was met.

This criterion was met. One (1) OFI was identified.

2-5. The CAS integrates processes for corporate audits, third-party certifications, and external reviews by experts that, in addition to validating contractor performance, are used to measure the effectiveness of CAS processes and activities.

A sample of completed FY09 assessments were evaluated as well as the overall assessment schedules for FY08 and FY09. In both years the assessment plans incorporated corporate audits, third-party certifications, and external reviews. These assessments were specifically reviewed and indicated a detailed and rigorous evaluation by parent, third-party, and external parties. Specifically, the CAS process was assessed

each year and the findings and opportunities for improvement were captured. The CAS reviews provided for corrective actions which are being implemented and have improved the program.

The LANL CAS CRAD Gap Analysis did not identify any potential Gaps and determined that this criterion was met

This criterion was met.

2-6. Deficiencies, weaknesses, and issues identified during assessments are accurately described and entered into a formal issues management system for processing, including analysis of causes, identification and implementation of corrective actions, and verification of the effectiveness of corrective actions.

LANL Issues Management Tracking System (LIMTS) is the tool used to track deficiencies, weaknesses, and issues identified during assessments. LIMTS supports the overall Issues and Corrective Action Management (ICAM) process which includes conducting causal analysis, identifying corrective actions, and verification of the effectiveness of issue resolution.

LANL has identified numerous examples both from feedback from users and during self assessments that the expectations for identifying, analyzing, and correcting issues identified during assessments are not being consistently met. LANL has determined that this overall issue has many causes, some of which require changes to the Issues and Corrective Action Management (ICAM) process, some of which require changes to the LIMTS software and tools, and some that require additional training and reinforcement through management attention. To manage all these efforts, LANL has initiated an effort to reengineer the ICAM. This overall effort has been identified by LANL as the ICAM reengineering effort and is discussed in detail in CRAD 4.

LANL noted in the CAS CRAD Gap Analysis that causal analysis expectations defined by the ICAM process are not always followed and may not be effective. These issues were being tracked in the CAP for the 2007 HSS Finding D-10 as LIMTS # 2007-6284 and Finding D-11 as LIMTS # 2007-6285. During the FY 08 CAS self assessment, LANL concluded that most issues from management assessments were being entered into LIMTS. However, issue resolution effectiveness was determined to be not fully effective. This was due in part to not following established expectations for conducting causal analysis.

LANL also identified in the CAS CRAD Gap Analysis that POFMA identified issues are not being effectively entered into LIMTS. In their self assessment LANL determined that only 37% of issues from the POFMA independent assessments were entered into LIMTS.

Based on these identified gaps, LANL concluded that this criterion was not fully met. During discussions with CAO-D staff and PAD, AD, and FOD-level Issue Management Coordinators (IMCs), and direct observation of the IMRB and the local MRBs, the team noted that the timelines for entering and processing independent and external assessment results were not being consistently met. For example, LASO staff noted that issues identified and sent by COR letter to LANL for processing in LIMTS were consistently exceeding processing timeliness. To remedy this situation, the LASO COR letter set an expectation in the body of the letter that issues are to be entered in LIMTS within 10 days and the LIMTS numbers be provided to LASO. Then the LASO Functional Area Manager could subsequently monitor the timeliness of issue screening and corrective actions is applicable (Note- causal analysis and corrective actions were only required for issues determined to meet Category level 1 and 2 thresholds). Also, CAO-D personnel and IMCs noted that independent assessment reports were not being effectively routed to all potentially affected organizations and MRBs in a timely manner which in turn adversely impacted the ability to identify and screen the potential issues from these reports in a timely manner. Based on this review, the team concurred with the LANL CAS CRAD Gap analysis for this criterion that results from independent and external assessments were not being effectively entered into the LIMTS system for processing.

The team attempted to sample several completed assessment reports and determine whether corrective actions were properly completed using LIMTS. However, the team was not able to track corrective actions from the assessments. This was apparently due to the issues and corrective actions not being properly linked to the assessment report when entered into LIMTS. The team also reviewed some completed effectiveness evaluations completed to determine the effectiveness of completed corrective actions for significant issues (CAT 1 or 2 issues). The team noted based on this sample that effectiveness evaluations found a number of the corrective actions that were either not completed as indicated or were determined to be not effective at correcting the cause. Both the FY 08 CAS Self Assessment and the CAS Parent Organization Functional Assessment identified that overall issue resolution was only partially effective.

The team subsequently concurred with the LANL CAS CRAD Gap Analysis that causal analyses were not consistently being conducted as required by the LANL ICAM process. **(ISS CAS 2-6.1)** The team noted that since this self identified issue was a clear deficiency against the criterion and had not been resolved it should be carried forward as an Issue. This deficiency is categorized as an Issue since it does not have any near term adverse impact in the related CAS functional area.

The team also concluded that LANL is not meeting expectations for the timely entering and processing of independent and external assessments results as required by their ICAM process. **(ISS CAS 2-6.2)** The team noted that since this self identified issue was a clear deficiency against the criterion and had not been resolved it should be carried forward as an Issue. This deficiency is categorized as an Issue since it does not have any near term adverse impact in the related CAS functional area.

This criterion was not met. Two (2) Issues, self identified by LANL, were identified.

2-7. Assessments are planned and performed by adequately trained contractor personnel having the proper authority, independence, and unfettered access to facilities, information, and personnel to allow for effective evaluations.

P328-2, *Independent Assessments*, P328-3, *Management Assessments*, and P328-4, *Management Observations and Verification*, define the training requirements which must be fulfilled for performing each of these types of assessments. The procedures list both recommended and required training for PADs/ADs, Managers, Management Assessment Teams and Team Members, Managers of teams performing independent assessments, Independent Assessment Team Leaders and Team Members, and CAO-DS personnel. As noted in criterion 1-4, the procedures did not reflect the current status of the training. Additionally, some of the required training courses have not been developed, although the individual procedures contain a statement that all personnel listed must receive the training within 6 months after the training is developed.

The LANL CAS CRAD Gap Analysis identified the following potential GAP related to this criterion:

- Not all of the courses specified in P328-2 and P328-3 as requirements for assessor and manager qualification and training requirements have been developed.

This potential gap was identified in the LANL FY 08 CAS Management Self-Assessment as LIMTS #2008-3482. LANL characterized this potential gap as an OFI and concluded that this criterion was met. The team concurred with this conclusion. (See discussion in Criterion 1-4 for additional details)

This criterion was met.

2-8. Significant assessment results, issues, and deficiencies are reported to responsible contractor and DOE managers and authorities.

The process for capturing and documenting assessment results is done in accordance with PD 322, *Issues and Corrective Action Management*, P322-3, *Manual for Communicating, Investigation and Reporting Abnormal Events*, and P322-4, *Issues and Corrective Action Management*. Per these procedures, all assessment information is entered into the LANL LIMTS database, which is readily available to LASO line management.

In addition to using LIMTS, it was noted in discussion that several LANL ADs meet one on one with their LASO counterparts on a regular basis to discuss in person assessment results, issues, and deficiencies. The team subsequently concluded that LANL should encourage all LANL ADs to initiate regular meetings with their LASO counterparts to discuss in person assessment results, issues, and deficiencies. **(OFI CAS 2-8.1)**

The LANL CAS CRAD Gap Analysis identified the following potential GAP related to this criterion:

- While all information is available, locating assessment reports and associated issues in LIMTS can be cumbersome for contractor and DOE managers. This was categorized as an OFI in the FY 08 CAS POFMA.

LANL determined that this criterion was met with the one OFI identified above.

This criterion was met. One (1) OFI was identified.

SUMMARY OF RESULTS:

LANL has documented assessment process in place which includes self-evaluations of compliance with various requirements as well as risk based assessments. There are generally three types of assessments used in support of the program – Independent Assessments, Management Self-Assessments and Management Observations and Verifications. The assessments are used by line management to evaluate and document the adequacy of programs, processes, and performance. The results of the assessments are evaluated to identify needed improvements to programs, processes, and performance. Assessments include corporate audits, third-party certifications, and external reviews by experts that, in addition to validating contractor performance, are used to measure the effectiveness of CAS processes and activities.

The team concluded that the LANL assessment process was adequately documented, was generally being implemented as designed, and was continuously improving. However, deficiencies were identified in the planning, performance, and documentation of assessment results that indicate that NNSA's expectations for the overall assessment process were not being fully met.

Five (5) of the eight (8) criterion were met which agreed with the results of the LANL CAS CRAD GAP analysis. Four (4) issues, all self identified by LANL, and seven (7) OFIs were identified.

Issues:

ISS CAS 2-2.1 – LANL assessment planning program document does not explicitly identify the requirement to identify and document the scope and frequency of required assessments as required by DOE O 226.1A.

ISS CAS 2-3.1 – The LANL assessment planning and scheduling process does not ensure that the assessment scope for any single year includes all applicable functional areas, programs, facilities, systems, activities, and organizations including subcontractors.

ISS CAS 2-6.1 – Causal analyses were not consistently being conducted as required by the LANL ICAM process.

ISS CAS 2-6.2 – LANL is not meeting expectations for the timely entering and processing of independent and external assessments results as required by their ICAM process.

Opportunities for Improvement:

OFI CAS 2-1.1 – LANL should develop steps and or process tools to validate that required assessments identified during the annual assessment planning process and incorporated into the annual assessment plan are accurate and complete.

OFI CAS 2-2.1 – LANL could improve the assessment planning process by developing a tool that clearly defines the subset of assessments (typically referred to the baseline or core assessments) for each Requirements Area Owner and/or Functional Area Manager.

OFI CAS 2-2.3 – LANL should consider performing a parent organizational peer or benchmarking review to evaluate the use of available management assessments resources across functional areas and the overall ratio of management observations to management assessments, and management assessments to independent assessments to determine if there are related goals, metrics, or measures to optimize to effectiveness of overall assessment resources.

OFI CAS 2-2.4 – LANL could improve the overall assessment planning process by developing an integrated multi-year planning tool that identified all required assessments and their associated periodicity to use as a planning template for annual and future assessment scheduling.

OFI CAS 2-3.1 – LANL needed to improve the selection, scope, and conduct of management self assessments to ensure that they included a balance of compliance-based and performance-based review activities.

OFI CAS 2-4.1 – LANL should consider categorizing MOVs as an Operational Awareness activity instead of an assessment activity.

OFI CAS 2-8.1 – LANL should encourage all LANL ADs to initiate regular meetings with their LASO counterparts to discuss in person assessment results, issues, and deficiencies.

CAS-3: Contractor Assurance System Operational Awareness**PERFORMANCE OBJECTIVE:**

Contractor management has established a rigorous and credible CAS operational awareness program that evaluates and documents operating experience and uses the results of incident reporting, performance measures, worker feedback, and lessons learned programs and processes as the basis for informed management decisions to improve.

DISCUSSION:**CRITERIA**

3-1. Contractor management has implemented a structured, formal program for prompt reporting, analysis, and trending of data from operational events, accidents, injuries, and near misses. Incidents are thoroughly investigated to determine the causes and surrounding circumstances, and if they are reportable (e.g., under DOE Occurrence Reporting and Processing System, Price Anderson Amendment Act Noncompliance Tracking System, CAIRS, or OSHA requirements).

LANL has established a program to promote prompt reporting and analysis of data from operational events, accidents, injuries, and near misses primarily through implementation of multiple supporting processes and tools. For example, operational events are managed in accordance with P 323-3, *Manual for Communicating, Investigating, and Reporting Abnormal Events*. Injuries and illnesses are managed and tracked in accordance with P 102-2 *Communicating, Investigating, and Reporting Occupational Illnesses and Injuries*. Additional reporting is managed using P 141, *Price Anderson Amendments Act (PAAA) and Worker Safety and Health (WSH) Enforcement Program*. Screening for PAAA and WSH reportability is performed as part of the ICAM process.

Expectations for performing causal analysis are included in several of the above mentioned programs. Accident investigation, Category 1 and 2 issues which are the highest category of issue in the LANL issues management tracking system (LIMTS), and issues identified as part of the Occurrence Reporting and Processing System (ORPS) all require a documented causal analysis in their associated implementing procedures. Details for how to perform causal analysis are contained in the LANL Causal Analysis Guide and associated training course trending occurs using multiple methods. The most visible trending and analysis of operational events is captured in the LANL Dashboard. Category 1 and 2 LIMTS issues are analyzed and trended by the Strategy, Policy, and Analysis Office (CAO-SPA) in support of the Institutional Management Review Board (IMRB). Trending of ORPS reportable events is conducted and the results are published in a quarterly report.

The LANL Mirror is a quarterly publication prepared by the Associate Directorate for Environment, Safety, Health, and Quality (ADESH&Q) and the Performance Feedback

Office (CAO-PF) that is part of the LANL Operating Experience Program and one of LANL's key trending methods. The Mirror includes trending of occurrence reports against previous years, and includes overall results of this trending and the results binned by ORPS category. The Mirror also includes detailed sharing of lessons learned from key occurrences, and featured lessons and experiences from security, emergency, and environmental management activities. It is distributed to management and DOE in hardcover and to employees in electronic form.

Injuries and illnesses are trended by the ADESH&Q and made available to management and the workforce on the LANL intranet. Occupational Medicine has trending associated with its medical surveillance program as part of its exposure management activities.

The team noted evidence that trending at the functional area owner such as ADESH&Q or the process owner such as ORPS was being performed and was being used to drive continuous improvement. The team noted that although some trending is performed at the facility level, the consistency and degree of documentation of the facility level trending varied widely. Although there is not a DOE or LANL requirement for trending to be performed at an individual facility level, during interviews the facility lessons learned coordinators stated that improving trending at the facility level could be useful. Lastly, the team noted that the level of trending and analysis of operational event information is affected by the experience of the person(s) performing the trending. The team identified one OFI in Criterion CAS 3-3 related to improving facility level trending of performance data. (See OFI CAS 3-3.1)

LANL noted in the CAS CRAD GAP Analysis for Criterion 3-1 that trending of Dashboard metrics indicated that timely categorization of ORPS events was only at 56% and timely submission of final occurrence reports was at 17%. The Dashboard included a note that timeliness was affected by resource issues. LANL identified this adverse trend as a potential gap in the CAS CRAD Gap analysis report and concluded that this criterion was not fully met.

The team subsequently concluded that the self-identified adverse trend in timely ORPS Categorization (56%) and timely submission of Final ORPS reports (17%) does not support timely trending of operational data. (**ISS CAS 3-1.1**) The team noted that since this adverse trend identified by LANL was a clear deficiency against the criterion and had not been resolved it should be carried forward as an Issue. This deficiency is categorized as an Issue since it does not have any near term adverse impact in the related CAS functional area.

This criterion was not met. One Issue, also self-identified by LANL, was identified.

3-2a. Contractor management has implemented a structured, formal program to routinely identify, gather, verify, analyze, trend, disseminate, and make use of performance measures/indicators.

Measures are developed and used in accordance with PD-324, the LANL Metrics Program. The process used has its basis in managers identifying the critical success factors for their part of the contractual Statement of Work (SOW) and then selecting a set of measures that will enable them to monitor progress towards success and drive improvement. All measures in the LANL Dashboard require classification review and approval by the responsible associate director. Measures have assigned measure owners who update them and review levels and trends on a monthly basis. For measures that are performing below desired levels, what LANL refers to as Yellow or Red measures, the measure owner must supply commentary that describes: 1) What the problem is; 2) An analysis of the cause; 3) What actions are needed to improve performance; and, 4) What the timeframe is for implementing the actions. Commentary quality for Yellow and Red measures is reviewed monthly by CAO-PF and tracked in the LANL Dashboard.

The LANL Dashboard starts with the development of goals and corresponding measures. The goals and measures are proposed by the measure owner and are approved by the appropriate Assistant Director (AD). The measures are rolled up into the LANL Dashboard such that higher level measures can easily be reviewed by management. The measures that roll up into the higher measures are electronically linked and are always available for review by interested parties.

This sub-criterion was met.

3-2b. Measures/indicators are carefully selected to accurately reflect actual performance (in the functional areas of nuclear safety; ES&H; safeguards and security; cyber security; emergency management, and business management) and are collected at intervals that allow for early identification of performance weaknesses or deterioration.

The team noted that performance measures are evident in the Dashboard for all required areas from DOE O 226.1A. The six functional areas called out in the DOE Order are all covered within the Dashboard. As of August 15, 2008, the aggregate LANL Dashboard contained 1,426 Laboratory level measures, 1,740 directorate-level measures, 3,334 division and office level measures, 352 Facility Operations Director (FOD) measures, and 74 subcontractor measures. A standard set of 26 safety, security, and environment measures are in place for divisions, offices, and major sub-contractors.

The measures are updated monthly, and are reviewed at various frequencies depending on the level of the organization. For example, at the Director and PAD level, the measures are reviewed monthly. For the AD and FOD level, measures are reviewed more frequently (weekly or bi-weekly). Measures that are Yellow or Red or that have an adverse trend are reviewed by managers and have active commentary. The quality of the commentary is reviewed during the Gap analysis; it was noted that the quality was sustained above 90% for both the Red and Yellow measures. During the LASO/LANL

Contractor Assurance Briefings management indicated their expectation that any measures that indicated a sustained Green Rating needed to be reviewed to ensure that the selected target for a green measure was sufficiently challenging and supported continuous improvement.

This sub-criterion was met.

3-2c. Performance measures/indicators are approved by contractor management and are clearly linked to established performance objectives, goals, and expectations.

Measures that are included in the LANL dashboard are developed and approved by the line and functional area managers. The source of the measure is clearly indicated in the dashboard for the measure. For example, the driver for the measure could be a contract performance-based incentive, annual commitment, or other expectation. The LANL CAS CRAD Gap analysis indicated that 60% of goals and commitments have measures that are associated with annual commitments. The team noted that this indicates some management risk-based discretion in determining which objectives, goals, and expectations to associated measures developed and tracked. The team noted that this type of discretion was appropriate.

This sub-criterion was met.

3-2d. Performance measures/indicators are periodically evaluated and revised as necessary to ensure maximum benefit is realized from the information being collected and analyzed.

As noted above, LANL has identified a core set of 26 safety, security, and environment measures for divisions, offices, and major sub-contractors. In addition, the performance measures program allows the line managers for both achieving and supporting mission to develop additional measures based on their particular mission and functional areas. These additional measures are often related to achieving overall goals, commitments, or performance. These outcome based measures are evaluated and updated or changed annually to reflect revised commitments and goals in the laboratory strategic plan and contract incentives in the contract performance evaluation plan (PEP).

The team noted that some level of variability in the identification of measures was to be expected across the mission and functional areas. However, in some areas a majority of metrics focused on achieving established goals and commitments and did not include a balance of other overall system or program performance measures, including leading indicators. For example, the team noted that LANL had developed over the last several years measures that focused on portions of the ICAM process where improvement was needed. These outcome-based measures may have driven improvement in that one element of the process, but leading measures to evaluate the overall

process/system/program effectiveness had not yet been identified. During interviews, the team noted that in FY 09, LANL identified an overall CAS program effectiveness measure during development of the PEP with NNSA LASO. LANL and LASO are working together to refine this measure to ensure that it helps achieve the desired improvements in overall system performance. The team noted that this type of ongoing evaluation and refinement both in the selection of and overall balance of measures should be done periodically at the institutional level. The team subsequently recommends that LANL should initiate activities to enhance consistency in the development and use of measures including an appropriate balance of outcome and overall process/program performance measures to ensure the maximum benefit is realized from the information being collected and analyzed. **(OFI CAS 3-2.1)**

The CAS CRAD Gap analysis LANL for this criterion identified the following potential gaps:

- Measures for Nuclear and High Hazard Operations are predominantly associated with achieving specified improvements and thus may not be reflective of overall operations performance.
- Most functional areas have opportunities to improve their use of actionable leading measures/indicators and compliance indicators.
- Although informal methods are in place to ensure the quality of the data in the Dashboard, there is no evidence of formal institutional expectations and mechanisms to ensure accuracy of the data in the LANL Dashboard. This may be especially important for measures with compliance and contract performance associations.

LANL characterized these potential gaps as opportunities for improvement and concluded that this Criterion was met.

This sub-criterion and the overall criterion were met. One (1) OFI was identified.

3-3.a Data collected from the reporting of operating experience (incidents, events, injuries, etc.) and performance indicators/measures is analyzed individually and collectively, to identify issues, deficiencies, weaknesses, and opportunities for improvement.

The team noted that LANL had several mechanisms in place to analyze operating experience and performance indicator information individually and collectively. Examples of individual and collective analysis mechanisms include:

- Quarterly trending of ORPS reports
- LANL MIRROR Publication (described in criterion 3-2.a above)

- Monthly measures commentary process for the LANL Dashboard
- Monthly Safeguards and Security (S&S) review
- Employee Concerns Program (ECP) annual metrics reports (web page)
- LANL Reports & Guidance for Accident & Injuries (web page)
- Institutional Radiation Safety Committee and trending/analysis of Radiation Protection Observation (RPO) reports
- Analysis and trending of LIMTS Category 1 and 2 issues as part of the Institutional Management Review Board
- AD ESH&Q Injuries and illnesses trending report available to management and the workforce (web page)
- Occupational Medicine Department trending of Medical surveillance program and patient care program

The team noted that management review boards (MRBs) are used to make management decisions based on information collected and analyzed from the above mechanisms. This could include entering an issue into LIMTS for formal corrective action, identifying steps to further investigate adverse trends such as additional analysis or assessment, or directing the use of available improvement tools to address opportunities for improvement. The team attended several MRBs during the review and observed these types of management decisions being made. However, the team was unable to determine whether the MRB charters defined the expectations for identifying and analyzing sources of trending information, and whether they included guidelines for identifying thresholds for potential issues and opportunities for improvement resulting from these analyses.

During document reviews, the team identified that the assessment planning process integrates data and issues trends with assessment selection guided by an assessment-planning tool. This supports selection of assessments that will be most effective in driving needed improvement. See CRAD 2 for details.

The team noted that as part of the ICAM re-engineering effort, LANL determined that they needed to identify all potential sources of trending and analysis information (such as nonconformance reporting, RPO, PAAA, WSH, First Aid reporting, etc), identify thresholds for when adverse trends would indicate a potential issue or an opportunity for improvement, and needed to provide expectations for validating the data in these other “feeder systems”. Additionally, LANL indicated during discussions with the team that they were developing an Institutional Performance Analysis Program. The team subsequently concluded that LANL should formalize site-wide expectations for the identification and use of available trending and analysis information to identify issues, weaknesses, and opportunities for improvement. **(OFI CAS 3-3.1)**

LANL identified in the CAS CRAD Gap analysis for this sub-criterion the following Potential Gap:

- Root and contributing cause analyses are not regularly performed for collective data sets.

LANL categorized this potential gap as an OFI and concluded that the supporting sub-criterion was met.

This sub-criterion was met. One (1) OFI was identified.

3-3b. Trained and qualified personnel perform data analysis and trending to determine the root and contributing causes of issues, deficiencies, and weaknesses, and to identify proposed corrective actions to improve performance and prevent recurrence.

Trending and analysis personnel are “assurance” personnel within the context of DOE O 226.1, and are required to have the requisite knowledge, experience, skills and abilities to conduct their assigned duties. The team noted that the LANL Operating Experience Program Coordinator has a staff of analysts that conduct most of the site-wide trending and analysis. During interviews, the team noted that these personnel appeared to have an appropriate level of knowledge, skills, and abilities to effectively perform their assigned duties.

As noted in the discussion in criterion 3-1, trending at the facility-level was at different levels of maturity. For those facilities that had a documented program, the team noted a higher level of implementation and effectiveness of the lessons learned program. For others, implementation was limited to the identification of a part time lessons learned coordinator. The team concluded that facility-level trending and analysis could be strengthened by formally defining expectations for implementing trending analysis for facility performance data. **(OFI CAS 3-3.2)**

During interviews, the team noted that several facility Lessons Learned Points of Contact responsible for performing data analysis and trending for their facilities did not have a documented set of knowledge, skills and abilities and supporting training activities to perform this function. Some training plans contained requirements for root cause analysis training. However, the identification or selection of types of training for personnel performing a CAS related function was not formalized nor consistently applied. Therefore, the team noted that based on the level of training and experience needed to be an effective analyst, LANL should consider using the systematic approach to training to develop a minimum set of competency statements and methods of demonstrating achievement of these competencies for personnel conducting trending and analysis functions. **(OFI CAS 3-3.3)** The team noted that although a formal training and qualification program for an analyst is not a requirement, developing a set of competencies and supporting training activities and experience would improve the effectiveness of personnel performing these duties.

LANL identified in the CAS CRAD Gap analysis for this sub-criterion the following potential gap:

- Training and qualification (T&Q) requirements for personnel performing data analysis and trending are not formally established.

LANL categorized this potential gap as an OFI and concluded that the supporting sub-criterion was met. LANL categorized this potential gap as an OFI because DOE O 226.1A does not require a formal T & Q program for all assurance personnel.

This sub-criterion and the overall criterion were met. Three (3) OFIs were identified. One of the OFIs was also identified by LANL.

3-4. Formal, structured processes are in place to: identify and analyze lessons learned information from external and internal sources; determine applicability and necessary corrective or preventive actions; communicate lessons learned to target audiences and potential users; and ensure information is applied to future work activities to prevent repeat or similar problems or occurrences. Internal sources of lessons learned information includes operating experience, feedback from workers, and assessment results. Line managers effectively exchange lessons learned information with the rest of the DOE complex.

PD 323, *LANL Operating Experience Program*, and P 323-1, *LANL Operating Experience and Lessons Learned Process*, define the main processes and sources used for collection, screening, dissemination, and action tracking related to lessons and other learning from operating experiences. The LANL Operating Experience Program Coordinator frequently participates in DOE/NNSA Lessons Learned forums to facilitate the sharing of information. The Assessments Program and procedures specify that lessons learned from assessments are to be communicated and shared.

LANL evaluates the level of usage of the Operating Experience Program by tracking on a monthly basis the number of personnel accessing the lessons learned and experience website, the number of lessons and experiences categorized at the caution level and urgent level, the number of lessons learned archived, and the number of LANL-generated lessons learned for the DOE complex. For the last several months, approximately 1,500 individuals accessed the lessons and experiences website, 20-25 Caution lessons and experiences were shared with management and lessons learned staff, 1-2 Urgent lessons or experiences tracked to closure using the ICAM process, 50-60 lessons and experiences added to the archive each month, and approximately 3-5 LANL-generated lessons learned are shared per month with DOE.

All facilities have Lessons Learned Points of Contact (POCs). These individuals are working together along with institutional personnel to improve Lessons Learned implementation and standardization through the Operating Experience Program - Tools Working Group.

LANL utilizes several mechanisms to communicate lessons learned. The Lessons Learned and Operating Experience Weekly summary emails are sent to a wide distribution of LANL Managers, the LANL Worker Safety and Security Teams (WSSTs), LASO, the Facility Lessons Learned POCs and others that have subscribed to this service. The team determined during interviews that the Facility Lessons Learned Coordinator POCs further screen the emails and share pertinent information with the facility management. The information is further disseminated in safety meetings and required reading. Currently, most lessons learned are distributed to the entire Operating Experience distribution list. The team noted that the effectiveness of the lessons learned program could be improved if additional screening is conducted to ensure that lessons learned are sent to the smallest possible target group (i.e., crane operators, glovebox workers, maintenance, etc.) in addition to or instead of the standard distribution list. **(OFI CAS 3-4.1)**

The team noted during interviews that the Facility Lessons Learned POCs all had other duties within their facilities. The team also noted that the Lessons Learned POCs function is not typically identified in the employee position description. The team subsequently concluded that LANL should consider identifying the Facility Lessons Learned POC function in position descriptions in order to improve the implementation of this important function. **(OFI CAS 3-4.2)**

Of all interviewed, several Facility Lessons Learned POCs were also responsible for issues management as either the facility Issues Management Coordinator (IMC) or backup Facility IMC. The team noted that a training plan was required for the IMC position but was not required or developed for the Facility Lessons Learned POC Function. The team subsequently concluded that LANL should consider developing a Facility Lessons Learned POC training plan to improve the consistency and performance of the overall lessons learned program. **(OFI CAS 3-4.3)** This training plan could be developed using a tabletop job task analysis as part of the systematic approach to training as noted in OFI 3-3.3

PD 323, *LANL Operating Experience Program*, requires that line managers: “Formalize their lessons learned mechanisms using a graded approach consistent with their local requirements for formality of operations and the risks involved in their operations.” The team observed the implementation of this graded approach during the review. The team noted that CMR and TA-55 have operational local lessons learned procedures and LANSCE and EWMP have draft procedures. Several of the facility lessons learned coordinators stated that they did not have a facility level lessons learned procedure. The team noted that although the graded approach allowed needed flexibility in the rigor of implementation based on complexity and risk, those facilities with documented programs were much more effective in achieving overall lesson learned program expectations through their facility-specific lessons learned mechanisms. The team subsequently determined that LANL should consider identifying an institutional expectation to develop a facility-level lessons learned administrative procedure in order to improve the consistency, flow down, and overall effectiveness of facility level implementation of the

lessons learned program. **(OFI CAS 3-4.4)** The team noted that the graded approach could be applied in the level of detail and rigor in the description and implementation of the procedure.

During interviews, the team noted that LANL should take near-term actions to enhance the query capability of LIMTS which would significantly improve the ability to effectively develop and target recipients of Lessons Learned based on trending and analysis of operational issues. **(OFI CAS 3-4.5)**

The use of Lessons Learned in training sessions is at different levels of maturity at LANL. LANL P781-1, R2, *Conduct of Training Manual*, section 3.2.3, requires the identification of lessons learned and case studies to illustrate the relevance of the learning objectives to the worker's work environment. The team was not provided any evidence that this requirement was being met during interviews with Facility Lessons Learned POCs and during reviews of recently completed facility level training. The team subsequently concluded that the development of facility specific training does not incorporate lessons learned to illustrate the relevance of the learning objectives to the worker's work environment as required by the LANL Conduct of Training Manual. **(ISS CAS 3-4.1)**

The team also determined that the use of Lessons Learned in work planning is at different levels of maturity at LANL. In general, the team noted that inclusion of lessons learned in facility documentation and meetings appears to be driven by individual managers and not by a defined facility level process. As a result, the team concluded that lessons learned are not consistently being incorporated into facility-level work planning activities as required by the LANL Integrated Work Management Procedure. **(ISS CAS 3-4.2)**

The team categorized these two deficiencies above as Issues since they indicated a clear requirement in the criterion and implementing LANL procedures was not being met that did not result in a near term adverse impact to implementation of CAS in the supported functional area.

LANL identified in the CAS CRAD Gap analysis for this criterion the following as a potential gap.

- Although processes and mechanisms are generally in place, operating experiences and lessons learned are not yet effectively incorporated into key work planning activities such as requirements development, training development, project planning, and IWD development.

This potential gap was identified in the FY08 CAS Management Self-Assessment report and was being tracked as LIMTS # 2008-3483. Based on this gap, LANL determined that this criterion was not fully met. The two issues identified by the team were specific examples of this deficiency identified by LANL.

This criterion was not met. Two (2) issues, which are specific examples of an overall issue self identified by LANL, and five (5) OFIs were identified.

3-5. Formal, structured programs and processes have been established to solicit feedback and lessons learned from workers on the adequacy of work definition and planning, hazard identification and analyses, implementation and effectiveness of hazard controls, and the performance of all types of work activities. Worker feedback collected and analyzed includes information from employee concerns programs, pre-job briefs, job hazard walk-downs by workers prior to work, post-job reviews, employee suggestion forms, safety meetings, employee participation in committees and working groups, the differing professional opinion process, and labor organization input.

The LANL CAS SD and implementing procedures for worker feedback include the following worker feedback mechanisms:

- employee concerns programs,
- safety help desk,
- nested safety committees
- post-job briefs,
- job hazard analysis completed for the Integrated Work Document (IWD) Part 1
- post-job reviews captured in the IWD Part 4
- Barrier Removal Program
- Worker Safety and Security Teams

The team noted that the worker feedback mechanisms identified by LANL are consistent with the worker feed back mechanisms listed in paragraph 4 of attachment 1, Appendix A, of DOE O 226.1A. Additionally, the team noted that the nested safety committees provide an excellent forum for sharing lessons learned and developing solutions for issues that are evident at multiple facilities. The team noted that LANL could strengthen the visibility of worker feedback by developing a performance metric related to worker feedback. **(OFI CAS 3-5.1)** Additionally, LANL could improve worker feedback by developing formal processes to collect and respond to good catches and recommendations. **(OFI CAS 3-5.2)**

The LANL CAS Gap Analysis noted that the FY08 LANL Director's Institutional Assessment on Integrated Work Management found that IMP 300.5, *Integrated Work Management (IWM)*, was being used throughout LANL, but was not effectively performed throughout. LANL noted in this assessment that improvements were needed in several organizations in applying workers knowledge, experience and training; providing independent oversight and facility coordination for Work Area Hazards ID; and in applying feedback and improvement mechanisms.

LANL determined that this criterion was not met based on the results of the above institutional assessment related to not effectively applying worker feedback in the IWD Part 4. This deficiency was being tracked as LIMITS # 2008-3272 and 2008-3275.

The team subsequently concluded that the LANL IWM process was not being effectively utilized to solicit and incorporate worker feedback in order to improve activity level work performance. **(ISS CAS 3-5.1)** Although this weakness was self-identified by LANL, the team determined that it should be carried forward as an Issue since it involved a clear deficiency against the criterion and it had not been resolved. This deficiency is categorized as an Issue since it does not have any near-term adverse impact in the related CAS functional area.

This criterion was not met. One (1) issue, self identified by LANL, and two (2) OFIs were identified.

3-6a. The results of all contractor operating experience, worker feedback, and lessons learned activities are formally documented and readily available to DOE and contractor management, including electronic access.

Assessment issues and management information is readily available to the NNSA LASO in electronic form in LIMTS. All operating experience information/lessons learned data is available to DOE and NNSA LASO in the LANL Operating Experience Lessons Learned Archive. The LANL Operating Experience Program Coordinator is currently working with the LASO Operating Experience Program Coordinator to provide support to LASO's implementation of an Operating Experience Program. The team observed evidence that the LANL Operating Experience Program Coordinator actively participates in the DOE Operating Experience Program. Examples include attendance at meetings and submitting several Lessons Learned for distribution to other DOE and NNSA sites.

NNSA/LASO has access to the LANL Dashboard (see criterion 3-2 for discussion of the LANL Dashboard). These metrics provide indexes that represent a roll-up of contractor performance. Overall and drill down metrics associated with CAS are also available to NNSA through the LOCAS portal.

This sub-criterion was met.

3-6b. Significant results, issues, and deficiencies are promptly reported to responsible contractor and DOE managers and authorities.

LIMTS is used to capture all LANL issues and deficiencies. NNSA/LASO personnel have electronic access with a crypto card. The team noted that it is difficult to find information in LIMTS if you do not have the assessment or issue number. Issues associated with LIMTS limitations are discussed under CRAD 4, criterion 4-4.

This sub-criterion and the overall criterion were met.

SUMMARY OF RESULTS:

LANL has implemented a structured, formal program for prompt reporting, analysis, and trending of data from operational events, accidents, injuries, and near misses and to routinely identify and make use of performance measures/indicators that reflect actual performance in the all the required functional areas. LANL needed to continue improving the selection, analysis, communication, and response to performance measures and indicators to ensure they effectively supported early identification and correction of performance deficiencies.

LANL has implemented a formal process to identify and analyze lessons learned information from external and internal sources, to determine applicability and necessary corrective or preventive actions and to communicate lessons learned to target audiences and potential users. Results of operating experience, worker feedback, and lessons learned activities are formally documented and readily available to DOE and contractor management, including electronic access. Deficiencies were identified in the effectiveness of gathering and applying worker feedback and lessons learned to work activities to prevent repeat or similar problems or occurrences. Several opportunities for improvement were noted related to implementation of lessons learned processes and training of personnel performing CAS support functions across all the various facilities at LANL.

Three (3) out of six (6) criteria were met. This matched the results of the LANL CAS CRAD GAP Analysis. Four (4) issues, all of them self-identified by LANL, and eleven (11) opportunities for improvement were identified.

Issues

ISS CAS 3-1.1 – The LANL Dashboard adverse trend in timely ORPS Categorization (56%) and timely submission of Final ORPS reports (17%) does not support timely trending of operational data. (*Self-Identified*)

ISS CAS 3-4.1 – The development of Facility-specific training does not incorporate lessons learned to illustrate the relevance of the learning objectives to the worker's work environment per the LANL Conduct of Training Manual.

ISS CAS 3-4.2 – Lessons learned are not consistently being incorporated into facility-level work planning activities as required by the LANL Integrated Work Management Document.

ISS CAS 3-5.1 – The LANL IWM process was not being effectively utilized to solicit and incorporate worker feedback in order to improve activity level work performance. (*Self-Identified*)

Opportunities for Improvement

OFI CAS 3-2.1 – LANL should initiate activities to enhance consistency in the development and use of measures including an appropriate balance of outcome and overall process/program performance measures to ensure the maximum benefit is realized from the information being collected and analyzed.

OFI CAS 3-3.1 – LANL should formalize site-wide expectations for the identification and use of available trending and analysis information to identify issues, weaknesses, and opportunities for improvement.

OFI CAS 3-3.2 – Facility-level trending and analysis could be strengthened by formally defining expectations for implementing trending analysis at the facility level.

OFI CAS 3-3.3 – LANL should consider using the systematic approach to training to develop a minimum set of competency statements and methods for demonstrating achievement of these competencies for personnel conducting trending and analysis functions.

OFI CAS 3-4.1 – The effectiveness of the lessons learned program could be improved if additional screening is conducted to ensure that lessons learned are sent to the smallest possible target group (i.e., crane operators, glove box workers, maintenance, etc.) in addition to or instead of the standard distribution list.

OFI CAS 3-4.2 – LANL should consider identifying the Lessons Learned POC function in position descriptions in order to improve the implementation of this important function.

OFI CAS 3-4.3 – LANL should consider developing a Facility Lessons Learned POC training plan to improve the consistency and performance of the overall lessons learned program.

OFI CAS 3-4.4 – LANL should consider identifying an institutional expectation to develop a facility-level lessons learned administrative procedure in order to improve the consistency, flow down, and overall effectiveness of facility level implementation of the lessons learned program.

OFI CAS 3-4.5 – LANL should take near term actions to enhance the query capability of LIMTS which would significantly improve the ability to effectively develop and target recipients of Lessons Learned based on trending and analysis of operational issues.

OFI CAS 3-5.1 – LANL could strengthen the visibility of worker feedback by developing a performance metric related to worker feedback.

OFI CAS 3-5.2 – LANL could improve Worker feedback by developing formal processes to collect and respond to good catches and recommendations.

CAS -4: Contractor Assurance System Issues Integration and Management**PERFORMANCE OBJECTIVE:**

Contractor management has established a comprehensive, structured issues management system that provides for timely, integrated, and effective resolution of deficiencies.

DISCUSSION:**CRITERIA:**

4-1. Program and performance deficiencies, weaknesses, issues, findings, etc., regardless of their source, are captured in a structured system or systems that provide(s) for effective analysis, resolution, and tracking. Issues management system elements include formal processes for:

- Determination of risk, significance, and priority
- Evaluation of scope and extent of condition
- Determination of reportability under applicable requirements
- Identification of root and contributing causes
- Identification and documentation of corrective actions to prevent recurrence
- Identification of individuals/organizations responsible for implementing corrective actions
- Establishing schedules based on significance and risk
- Tracking progress
- Verifying that corrective actions are complete
- Validating the effectiveness of corrective actions

The formal processes delineated in this criterion are established in an approved and structured system primarily described within the PD322, *Issue and Corrective Action Management*, and sub-tier suite of directives. Additional system components appear in the Contractor Assurance System and Integrated Safety Management Description Documents. The Contractor Assurance System (CAS) Description Document states, "The LANL Issues Management and Tracking System (LIMTS) feature a single point for data entry for collecting unclassified issues and performing trend analysis." However, during interviews and review of documents, the team noted that LIMTS has not proven to be an efficient and effective system to capture performance information from all sources, and is cumbersome and time consuming to use for issue analysis, resolution, and tracking. For example, LANL has found that some previously existing and mandated performance tracking and monitoring systems (e.g., ORPS, SIMS, radiological action reports, etc.) provide equivalent or duplicative systems with varying threshold and categorization levels that inhibit efficient and effective trending, extent of condition, and collective analysis processes across all directorates. This weakness was previously recognized by LANL and documented in their FY08 Management Self Assessment of CAS Implementation and Effectiveness. In response to the well-documented problems

with both LIMTS and the support ICAM process, LANL has developed and is implementing a comprehensive ICAM re-engineering project.

LANL has completed annual management self-assessments of CAS implementation and effectiveness since 2007. In February 2009, LANL completed a “gap analysis” of the existing CAS system against the December 2008 NNSA draft “Criteria and Approach Document for Assessing Contractor Assurance Systems at NNSA Sites,” by completing a tabletop review of the results of the 2008 MSA. In these reviews, LANL identified the following Gaps for this criterion:

- Causal analyses expectations defined by the ICAM process are not always followed and may not be effective.
 - o CAP for HSS Finding D-10 – LIMTS #2007-6284 and many other internally generated issues.
- The “extent of condition” expectations defined by the ICAM process are not always followed and may not be effective.
 - o CAP for HSS Finding D-10 – LIMTS #2007-6284
- Issues management system interfaces between the functional area systems and the institutional system (LIMTS) are not yet operating effectively.
 - o CAP for HSS Finding D-10 – LIMTS #2007-6284
- Technical review information is not captured in a structured system.
 - o New OFI.
- ISITS performance is not yet being tracked in the LANL Dashboard.
 - o New OFI – follow on to FY08 CAS Management Self-Assessment – LIMTS # 2009-1076

Based on document reviews and interviews, the team agreed with the identification and analysis of the above deficiencies identified by LANL. Based on these self-identified deficiencies, LANL determined that this criterion was not fully met.

The team subsequently concluded, based on both independent analysis and review of self-assessment results, that LANL’s ICAM process does not function as an effective, integrated system to capture performance feedback from all sources, and to facilitate continuous improvement through efficient analysis, resolution, and tracking of identified issues. **(ISS CAS 4-1.1)**

The team determined that since resolution of these deficiencies were of fundamental importance to the successful implementation of the ICAM process that the deficiencies identified by LANL should be carried forward by the team as Issue 4-1.1 noted above.

This criterion was not met. One issue, self-identified by LANL, was identified.

4-2. Issues management processes include mechanisms to promptly identify the potential impact of a deficiency and take timely actions (e.g., stopping work, compensatory measures) to address conditions of immediate concern pending formal documentation and resolution of the issue.

As discussed for criterion 4-1, LANL self-identified that current implementation of the LIMTS tool and the ICAM process does not consistently result in timely issue identification, categorization, and determination of impact. Although this deficiency exists, the team found no indication of unscreened concerns or issues that warrant immediate compensatory measures, or which do not already have compensatory measures in place. LANL is tracking the current population of unscreened issues (~43) and has demonstrated adequate progress toward getting these issues properly screened, categorized, and corrective actions identified and assigned. However, the team noted that LANL needed to reduce the time delay between issue identification, entry into LIMTS, categorization, action assignment, and corrective action development. **(OFI CAS 4-2.1)** The team also noted that LANL should consider development of an issue lifetime (cradle to grave) metric to facilitate evaluation of overall ICAM system effectiveness. **(OFI CAS 4-2.2)**

In June 2007, the LANL Contractor Assurance Organization identified a performance gap associated with the issue mitigation component of the ICAM process. LANL initiated a process improvement project (PIP), chaired by a Lean Six Sigma black belt, to identify and resolve the process performance gap. The PIP published its results in May, 2008. The PIP identified several existing weaknesses (both software and organizational in nature) that collectively served to slow the process steps of issue identification, entering an issue into LIMTS, screening the issue for categorization against established significance criteria, and assignment for corrective action development. Identified barriers included insufficient training and workload of assigned Issue Management Coordinators (IMC), delays caused by disagreement between Associate Directorates (AD) as to the proper assignment of responsibility to correct identified issues (ownership), and an inherent cumbersome user interface with LIMTS that hindered efficient system interaction and use.

CAO-PI discussed the results of the PIP with senior management, who concluded that the existing Kaizen processes (which are intended to produce slow and steady implementation and increased effectiveness of the CAS across the LANL), were not sufficient to address the issues identified by the PIP and other issues identified by internal and external assessment activities. Rather, more drastic and dramatic change was warranted. CAO-PI subsequently initiated an ICAM re-engineering project to address the

major deficiencies in the process as well as continuing with current improvement activities to improve effectiveness of those areas working as designed.

LANL identified the following potential gaps during the CAS CRAD Gap analysis related to this criterion:

- The “extent of condition” expectations defined by the ICAM process are not always followed and may not be effective.
 - o CAP for HSS Finding D-10 – LIMTS # 2007-6284
- ISITS performance is not yet being tracked in the LANL Dashboard.
 - o New OFI – follow on to FY08 CAS Management Self-Assessment – LIMTS # 2009-1076

LANL categorized these potential Gaps as Opportunities for Improvement and determined that this criterion was met.

This criterion was met. Two (2) OFIs were identified.

4-3. Processes for analyzing deficiencies, individually and collectively, have been established that are designed to effectively identify programmatic or systemic issues, weaknesses, or deficiencies. Collective analysis includes assessment results, operating experience data (i.e., events/occurrences and performance metrics), worker feedback, and lessons learned to ensure a comprehensive, integrated, and accurate view of program, process, and performance effectiveness and identification of areas needing improvement. Line management uses the results of this analysis to optimize the allocation of resources, establish or modify performance goals and objectives, adjust or focus CAS processes, and take appropriate actions to address known issues and drive improvement.

LANL has established an approved process for analyzing deficiencies that is designed to effectively identify programmatic or systemic issues. The process is described in LANL P322-4, R4, *Issues and Corrective Action Management (ICAM)*. Appendices B and C of the P322-4 includes criteria for screening issues into one of five defined risk categories. Those issues deemed highest risk are assigned a categorization of “CAT 1” and lowest risks are categorized as “CAT 5”. As is typical, the process mandates more rigor, formality of documentation, and a higher level management involvement in the screening, resolution, causal analysis, and closure processes for CAT-1 issues, with correspondingly less prescriptive requirements for issues categorized as lower risk. The risk prioritization process allows for correction of observed deficiencies when identified, but still requires such issues be captured and tracked via the ICAM process for purposes of trending and collective analysis. The process recognizes the need to document and trend even lower risk issues. For example, the criteria for a CAT-4 (Trend Only) issues states the following: “*Monitoring and trending of these conditions is necessary to ensure that additional similar events are detected and addressed before they escalate into more significant issues.*”

The team observed Management Review Boards (MRB) in operation, interviewed Issue Management Coordinators and CAO representatives deployed to the ADs, queried the LIMTS database, and reviewed completed reports. The team noted examples of effective issue trending, recognition of potentially systemic or institutional issues, and adjustment of planned future assessments or management focus based on the issues identified. The process, as described in P322-4, appeared to be working as intended, for CAT-1 and CAT-2 issues for which MRB engagement is required. One MRB (ADSS) observed included a presentation and discussion of a summary of lower risk security-related incidents recently observed and reported.

However, generally for CAT-3, CAT-4, and CAT-5 issues, limited evidence was provided to indicate the trending and analysis of these lower risk issues was occurring as required and expected by LANL senior management. P322-4 specifically requires the CAO-PI organization to “mine data from LIMTS to evaluate trends” and “performs (sic) quarterly reviews of sample of Risk Category-3 (CAT-3), CAT-4, and CAT-5 issues for trends and proper applicability of risk category.” In response to team queries, LANL provided one report, “2008 Third Quarter Review of Issue Risk Categorization” (3/17/2009) which documented an analysis of a sampling of issues to ensure the proper risk categorization had been applied. However, no report addressed trending analysis of CAT-3, CAT-4, or CAT-5 issues as required. Interviews with the CAO-PI manager confirmed that documented trending and analysis of lower risk issues had not been occurring.

The Department of Energy Action Plan, “Lessons Learned from the Columbia Space Shuttle Accident and Davis-Besse Reactor Pressure-Vessel Head Corrosion Event” (July, 2005) concluded:

“DOE must pay attention to its own “weak signals”, e.g., near misses, equipment failures, minor conduct of operations problems, etc. that can be precursors to more significant events if the underlying causes are not identified and corrected.”; and

“A principal deficiency that led to both the Columbia and Davis-Besse events was the failure to recognize and take appropriate corrective actions on “weak signals,” i.e., small recognizable problems that were indications of abnormal situations that were either not recognized for their significance or dismissed entirely.”

By failing to fully implement the approved ICAM process in regard to trending and analysis of “weak signals” such as CAT-3, CAT-4, and CAT-5 issues, LANL may be at risk of missing precursor indicators of higher consequence issues or events. The team subsequently concluded that LANL has not previously conducted and documented quarterly analysis of Category 3, 4, and 5 issues for trends as required by their internal ICAM process document P322-4. **(ISS CAS 4-3.1)** LANL stated this activity was already in progress during the time of the review, but the team did not confirm this assertion. The team categorized this deficiency as an Issue since it indicated a failure to meet a clear

requirement in both the criterion and the LANL internal procedure that did not result in any near term adverse impact in the related CAS functional area.

In the CAS CRAD Gap analysis, LANL identified the following potential gaps related to this criterion:

- CAS does not include a mechanism to optimize resource allocation for long-standing issues.
 - o CAP for HSS Finding D-11 – LIMTS #2007-6285
- Many opportunities for improvement exist in terms of integrating information from CAS and other sources to better inform institutional management decisions. Some examples include creating standards for system/process bins that are consistent across assessments, issues, metrics, and lessons learned; including facility binning fields in both the assessment planning tool and the assessments workflow; better integration and collective reporting across all issues management systems, including the sub-tier systems.
 - o CAS FY08 Management Self-Assessment – LIMTS # 2008-3470

LANL categorized these potential gaps as OFIs and determined this criterion was met. However, based on the identification of the one issue noted above involving inadequate trending of lower level issues, the team concluded that this criterion was not met.

This criterion was not met. One (1) issue was identified.

4-4. Line management receives and values periodic information on the status of identified deficiencies and corrective actions and holds organizations and individuals accountable for timely and effective completion of actions. Based on a graded approach that considers hazards and risks, line management has executed mechanisms such as independent verification, technical reviews, and performance-based evaluation to ensure that corrective actions and recurrence controls are timely, complete, and effective.

As a result of observations of MRBs, interviews of executives, managers, and staff either in the Contractor Assurance Organization or Associate Directorships, and reviews of documents this team found evidence of line management support for an effective ICAM process. The team reviewed completed independent verification reports, technical reviews, and observed performance-based evaluations in progress (most notably in the MRBs observed). Several examples were apparent of effective line management engagement in the issue resolution process (especially for higher risk issues), as well as in the integrated suite of CAS performance metrics and processes. Mid-level managers interviewed demonstrated confidence that the LANL Director, Deputy Director, and senior management team are strong supporters of effective issues management and CAS systems, demonstrate that support by their leadership examples, and hold subordinate

managers and staff accountable for timely resolution of corrective actions. As discussed previously, LANL self-identified and invested resources to address and analyze observed weaknesses in the issue management throughput process, and senior management has endorsed a re-engineering process to address the deficiencies identified. The LANL Deputy Director was observed to be actively engaged and knowledgeable in both the institutional MRB and in the monthly performance evaluation process (PEP) between LANL and LASO. LASO has added performance criteria pertaining to CAS and issue management to the LANL PEP for FY09, and those performance objectives were discussed with LASO senior management, in depth, by the LANL Deputy Director and supporting managers during the monthly PEP meeting observed. Of particular note, LASO has asked that LANL develop and track performance metrics to demonstrate the value added by the LANL Parent Organization Oversight Process (POOP). To date, metrics developed in response to this request have been of mixed results, and both LANL and LASO senior management appear engaged in resolving this to their mutual satisfaction.

The LANL CAS CRAD Gap analysis did not identify any potential gaps related to this criterion. LANL determined that this criterion was met.

This criterion was met.

4-5. Issues management system data is formally documented and readily available to DOE line management, including electronic access. Significant issues, delays, and associated causes are reported to responsible contractor and DOE managers and authorities.

Issues management system data is documented in the LIMTS system, and is available to DOE managers and authorities electronically. LANL identified and reported to the NNSA LASO the results of the PIP and the resultant re-engineering project for the ICAM process and activities to continuously improve the LIMTS tool. The LASO CAS Program Manager and the Assistant Manager for Safety Operations (AMSO) periodically observe the Institutional MRB and AD or sub-tier level MRBs on a sampling basis (i.e., the Facility Operating Division MRBs under the Associate Director for Nuclear and High Hazard Operations (ADNHHO)). The LASO CAS Program Manager was able to demonstrate suitable proficiency using the LIMTS system to perform queries and mine information.

The LANL CAS Gap Analysis did not identify any potential gaps related to this criterion and LANL determined that this criterion was met.

This criterion was met.

SUMMARY OF RESULTS:

The LANL Contractor Assurance System Issues Integration and Management processes have been established and are being generally implemented as designed. Program and

performance deficiencies, weaknesses, issues, findings, etc., regardless of their source, are entered into the Los Alamos Issues Management Tracking System (LIMTS). The LANL Issues and Corrective Action Management (ICAM) process and the LIMTS tool include all the elements for an effective integrated issues integration and management process. LANL has self identified numerous process improvements and implementation deficiencies that have limited the overall effectiveness of an integrated issues and corrective action management process. LANL has started an ICAM re-engineering project to address some of the ongoing problems caused by the current design of the system as well as continuing to identify and implement opportunities for improvement in ICAM documentation, training, and implementation.

Three (3) out of four (5) criteria were met. The LANL CAS GAP Analysis determined that four (4) of the five (5) criteria were met. Two (2) Issues, one of which was self identified by LANL, and two (2) OFIs were identified. The one new issue identified by the team resulted in criterion 4-3 being rated by the team as not met that LANL had evaluated as met.

Issues:

ISS CAS 4-1.1 – The LANL ICAM process does not function as an effective, integrated system to capture performance feedback from all sources, and to facilitate continuous improvement through efficient analysis, resolution, and tracking of identified issues. (*Self Identified*)

ISS 4-3.1 – LANL is not conducting and documenting quarterly analysis of Category 3, 4, and 5 issues for trends as required by their internal ICAM process.

Opportunities for Improvement:

OFI CAS 4-2.1 – LANL needed to reduce the time delay between issue identification, entry into LIMTS, categorization, action assignment, and corrective action development.

OFI CAS 4-2.2 – LANL should consider development of an issue lifetime (cradle to grave) metric to facilitate evaluation of overall ICAM system effectiveness.

Appendix 3: List of Documents, Interviews, and Observations

Documents Provided During Pre-Visit

- Agenda for FY09 Directors Institutional Planning 9-18-08
- FY09 Proposed Directors Institutional Assessment V2.0
- Effective Evaluation (EE) Spreadsheet – Updated 1st Quarter 2009 1-6-09
- EE Views Metrics Table 1st Quarter 2009
- IMRB Status Update 1st Quarter 2009-IW3
- EE 2007-926-FINAL
- Emergency Response EE Plan 5-7-08
- Glove box EE
- IWM EE Plan
- Radiation Protection EE Plan
- Waste Management EE Report
- Waste Management EE
- 2007 HSS CAP Finding D-10 Action #2
- LMTS 2007-6284 Action 4 – Employee Concerns
- LMTS 2007-6284 Action #14 – Safety Concerns
- Copy of WSST action log
- FY09 Lessons Learned Improvement Plan V1.1
- FY09 LL Planning Workshop Agenda V1.0
- WSST 09_goals_actions
- WSST charter
- WSST glove box LL
- WSST Minutes 06-05-08
- WSST Minutes 07-24-08
- WSST Minutes 10-30-08
- WSST Minutes 11-06-08
- FY07 Q1 Mirror
- FY08 Q1 Mirror
- FY08 Q2 Mirror
- FY08 Q3 Mirror
- FY08 Q4 Mirror
- FY09 Q1 Mirror
- Lessons Learned (LL) Weekly 01-22-09
- LL Weekly 02-26-09
- LL Weekly 07-31-08
- LL Weekly 09-11-08
- LL Weekly 09-25-08
- LL Weekly 10-23-08
- LL Weekly 11-06-08
- LL Weekly 11-25-08
- LL Weekly 12-11-08
- Institutional Issues Summary 08-23-07
- Annual Assessment Plan

- ADE FY08 Assessments List Final
- ADEP FY08 Assessment 09-05-07
- ADESHQ Management Assessment 8-16-07
- ADESHQ Management Assessment 8-17-07
- ADISS FY08 Assessment 2
- ADNHHO FY08 Assessment Plan Final 08-20-08
- ADSS Excel template to List FY08 Assessments 32
- ADTSC FY08 Annual Assessment Plan 1
- FY08 ADBS Management Assessments
- FY08 Assessment Schedule and Completion Status
- FY08 Assessments – ADNHHO rev.0
- FY08 Assessments ADEPS
- FY08 Integrated Assessment Schedule, Rev2.0.1
- FY08 Schedule 08/23/07 Draft R2
- FY08 TSC Annual Assessment Plan1
- FY08 TSC Annual Assessment Plan3
- FY08 TSC Annual Assessment Plan
- LC FY08 Assessments Planning
- SMS FY08 Assessment Plan Revised 08-2-07
- SMS FY08 Assessment Plan Revised 08-23-07
- SMS FY08 Assessment Plan1 08-17-07
- DIR FY 09 Assessment Review
- EP FY09 Assessment Review
- LANL FY09 Assessment Plan – IMRB Approved 10-07-08
- PADOPS FY09 Assessment Review 1
- PADSTR FY09 Assessment Review 1
- PADWP FY09 Assessment Review 1
- ISSM Assessment
- CAS Gap Analysis FINAL
- Casual Analysis and Trending Manual – Guidance
- Examples – best practices identified
- Examples – Dashboard metrics analyses
- ICAM System Fundamentals Course #40340
- List of 26 Standard Safety Metrics
- ISMA IMRB Issue Screening 11-19-08
- LANL 2008 Contractor Assurance Self-Assessment Issues
- LANL CAP for HSS ESH Inspection
- Status of CAS-related CAP for 2007 HSS ES&H Investigation
- CAO-09-073 CASDD Transmittal to LASO
- CAS Description Document 02-09
- CASDD Final 03-08
- CASDD Final 09-12-06
- DIR-08-057 CASDD Revision Letters
- LASO Approval of CAS Description Document 04-08
- LASO CAS Acceptance 09-29-06
- LOCAS FY09 December Data and Commentary

- PCM-08-063 Multi-Year Strategy FY09-FY13
- 2007-4530 Contractor Assurance System POFMA
- CAO-08-064 Assurance Letters 10-01-08
- Final Integrated Mgt. Systems Assessment Report
- FY06 Annual Assurance Letter
- FY07 CAS Assessment Report FINAL
- FY08 CAS Management Self-Assessment Report FINAL
- FY08 CAS Self-Assessment Criteria Workbook with Data V51.0
- Report – Final LANL HSS ESH
- Report of 2008 Q4 CAP Evaluation R0
- Report of 2009 Q1 Cap Evaluation R0
- Risk Categorization Plan Evaluation 09-23-08
- Transmittal for final LANL HSS ES&H report
- PD1200-1 Emergency Management
- SD100 Integrated Safety Management
- SD200 Integrated Safeguards and Security Management
- SD330 LANL Quality Assurance Program
- SD400 Environmental Management System
- Prime Contract Clause H-1 to H-14
- CAS Gap Analysis FINAL
- Identification of CAS Gaps for NNSA CRAD
- Update on ICAM Reengineering 03-04-09
- FY 2009 PEP 09-29-2008
- PBI Final December 2008 w. LASO comments
- PBI Final January 2009 w. LASO comments
- PBI Final November 2008 w. LASO comments
- PBI Final October 2008 w. LASO comments

CRAD #1

RECORDS REVIEWED:

- LANL Requirements Management System (RMS) Overview (handouts), Prime Contract Management Office (PCM), March 2009
- FY09 CAS Assessment Requirements System Hierarchy and Policy Process (Handouts), March 17, 2009.
- Appendix G Directives Implementation Profile (Handouts)
- Contractor Assurance System Training Plan, Rev 0, 12/04/2008
- Contractor Assurance Office Administrative Procedure, March, 2009
- Contractor Assurance System Training Management Assessment, FY 2007

INTERVIEWS CONDUCTED:

- Policy Officer Leader, CAO-SPA
- CAO, Strategy, Policy & Analysis
- Requirements Team Leader
- Contract Assurance Manager (2)

- Contractor Assurance Specialist 3, CAO-Performance Feedback (2)
- Contractor Office Deployment Team, Training Project Leader and Training Course Coordinator
- Contractor Assurance Manager, Contractor Assurance Office – Deployed(CAO-D)

OBSERVATIONS:

- LASO/LANL Contractor Assurance Briefing training that included Dashboard Briefing Book Demonstration and LIMTS Demonstration, March 17, 2009.

CRAD #2

RECORDS REVIEWED:

- *Annual Assessment Plan and Integrated Assessment Schedule Development and Maintenance*, P328-1, Rev:1, December 10, 2008
- *LANL CAS FY09 CAS Gap Analysis*, March 3, 2009
- *Independent Assessment Program*, P328-2, Rev:1, May 12, 2008
- FY09 Assessment Planning Briefings to the Director (5 briefings)
- Directors FY09 Assessment Review
- LANL FY09 Assessment Plan, IMRB Approved October 7, 2008
- Risk Identification Form V3.0, March 12, 2009
- *2007-4499 POFMA Final Report*, August 27, 2008
- *2007-4530 Contractor Assurance system*, September 16, 2008
- *2007-4531 POFMA Final Report*, August 27, 2008
- *Bioscience, Biosecurity and Cognitive Science Capability Review*, August 12, 2008
- *POFMA Final Report*, July 24, 2008
- *2007-6140 Beyond the Standard Model Grand Challenge*, September 16, 2008
- *2008-354 POFMA Weapons Science Capability Review*, August 1, 2008
- *2008-1891 CMRR QA Program Final Report*, July 31, 2009
- *2008-3827 POFMA Final Report – CMR Safety*, March 2, 2009
- STO-DO Management Assessment of Integrated Work Management Implementation
- Management Assessment Report RP-1 Self-Assessment Process
- Surveillance of CMRR RLUOB ACCLP YEAROUT MECHANICAL'S Weld Rob Issue Station
- VSS Assessment – RANT Fire Suppression System
- VSS Safety System Assessment MIS
- Cognizant Systems Engineer DOE STD-1070-94 Assessment
- Management Assessment - Conduct of Engineering Implementation for NES
- Inspection report, TA-3 NMSSUP Aboveground Storage Tank Systems Annual Inspection
- QA Surveillance – QA-1A's Surveillance of NTS Radioactive Waste Acceptance Program
- Management Observation and Verification – Actinide Chemistry and Repository Science Program – Chemical Inventory
- Management Observation and Verification – Lab 151 Flammable Liquids
- Management Observation and Verification – Lab 156 Flammable Liquids

- Management Observation and Verification – Lab 152 Flammable Liquids
- Management Assessment – ST&E Process Evaluation and Improvement Project
- AIM Team – Lifecycle Management of Safety Class/Safety Significant Parts and Equipment
- Management Observation and Verification – Entry/Exit Procedure for DARHT DDC
- Type “1” MSA-MDA T Readiness
- QA Audit – Review of TSR Implementation Requirements at Area G
- Management Self-Assessment – WETF Fire Protection System VSS Self-Assessment
- Management Observation and Verification – Formality of Operations Review Axis 1 Mode 3
- Management Assessment – Control of Weapons Related Materials
- CAOPI-IM-02, RO, *Proper Application of Issue Risk Category*, October 2008
- PD328, *LANL Assessment Program*, Rev. 1, December 10, 2008
- P328-1, *Annual Assessment Plan and Integrated Assessment Schedule Development and Maintenance*, Rev. 1, December 10, 2008
- P328-2, *Independent Assessments*, Rev. 1, January 6, 2009
- P328-3, *Management Assessments*, Rev 1, January 6, 2009
- P328-4, *Management Observations and Verification*, Rev 0, December 11, 2008
- PD311, *Requirement System Hierarchy*, Rev. 0, October 4, 2007
- PD 322, *Issues and Corrective Action Management*, Rev. 0, December 2, 2008
- P322-3, *Manual for Communicating, Investigation and Reporting Abnormal Events*, Rev.0, December 11, 2008
- P322-4, *Issues and Corrective Action Management*, Rev. 4, January 26, 2009

INTERVIEWS CONDUCTED:

- Contractor Assurance Officer, Deputy
- Contractor Assurance Officer– Deployed to ADESH&Q
- Contractor Assurance Office – Performance Feedback Manager
- Contractor Assurance Office – Strategy, Policy, and Analysis Manager
- Contractor Assurance Officer – Deployed to Business Services
- Contractor Assurance Officer – Deployed to Nuclear and High Hazard Operations
- Contractor Assurance Officer - Deployed to Safeguards and Security
- Contractor Assurance Officer – Deployed to Environmental Programs
- Contractor Assurance Officer – Deployed to Corporate
- Contractor Assurance Office – Deployment Manager
- Contractor Assurance Office – Deployed Staff
- Contractor Assurance Office – Strategy, Policy, and Analysis Manager
- Contractor Assurance Office – Performance Improvement Manager

OBSERVATIONS:

- Management Review Board Meeting – ADESH&Q
- LASO CAS Training CAS Overview
- CAO Assessment Planning Tool Demonstration
- Kick-off Meeting for Personnel Training and Qualifications (LIMITS #2009-5)

CRAD #3**RECORDS REVIEWED:**

- *R Site Road Grinding and Repaving Lessons Learned, August 18, 2008*
- *PPE Contamination Potentially Due to Waste Segregation and Packaging Activities Lessons Learned, January 7, 2009*
- *Glove Changes, Room 319, Loss of Contamination Control Lessons Learned, January 16, 2009*
- *CAUTION: TA-55 requires independent verification of criticality safety limit hand calculations while vault procedure is being modified to include learning from CSL infraction, November 25, 2008*
- *Office of Health, Safety and Security Data Collection Sheet, Flash Bang Grenade Supplier Indicted for Fraud, November 18, 2008*
- *Lessons Learned and Operating Experience Weekly Summary, March 12, 2009*
- *P 323-3, Manual for Communicating, Investigating, and Reporting Abnormal Events*
- *P 102-2 Communicating, Investigating, and Reporting Occupational Illnesses and Injuries*
- *PD 323, LANL Operating Experience Program*
- *P 323-1, LANL Operating Experience and Lessons Learned Process*
- *Data Quality Review Guidelines (Draft – January 27, 2009)*
- *LASO/LANL Contractor Assurance Briefings, March 17, 2009*
- *AD-EP Management Review Board – 03/18-2009*

- *Email from Tom Starke, Subject: Correction: ADEP MRB March 18, 9:30-10-30 agenda and read aheads*
- *Baseline Assessment Plan and Criteria and Review Approach Document for Assessing Contractor Assurance Systems at NNSA Sites, December 2, 2008*
- *Los Alamos National Laboratory, FY 2009 1st Quarter, MIRROR*
- *Los Alamos National Laboratory, Annual Assurance Letter, October 1, 2008*
- *Los Alamos National Laboratory Contractor Assurance System FY09 CAS Gap Analysis, Final Report, March 3, 2009*
- LANL Dash Board
- Los Alamos Issues Management Tracking System (LIMITS)
- TA55-AP-078, R0, *Lessons Learned Program*
- CMR-AP -050, R0, *Lessons Learned Program*

INTERVIEWS CONDUCTED:

- LANL Operating Experience Coordinator
- LANL Operating Experience Staff (2)
- CMR FOD Lessons Learned Point of Contact
- CMR Administrator for FOD (2)
- CMR Operations Center Team Member
- CMR Equipment Operator
- EWOM Lessons Learned/Operating Experience Coordinator
- TA-55 Lessons Learned Point of Contact
- TA-55 Group Leader
- TA-55 Team Leader (2)
- Deployed Contractor Assurance Manager
- Deployed CAO Nuclear & High Hazard Operations
- TA-53 Lessons Learned/Operating Experience Coordinator
- TA-53 Crew Chief (2)

OBSERVATIONS:

- AD-EP MRB
- LASO/LANL Contractor Assurance Training

CRAD #4

RECORDS REVIEWED:

- Department Of Energy Action Plan – Lessons Learned From The Columbia Space Shuttle Accident And Davis-Besse Reactor Pressure-Vessel Head Corrosion Event (July 2005)
- Los Alamos National Laboratory Contractor Assurance System, FY08 Management Self Assessment, Final Report, LIMITS #2007-5466, (9/19/2008)
- Los Alamos National Laboratory, Contractor Assurance System Description Document, System Description 320, Revision 1, (February 2009)

- Los Alamos National Laboratory Contractor Assurance System, FY09 CAS Gap Analysis, Using the Criteria and Review Approach Document For Assessing Contractor Assurance Systems at NNSA Sites, Final Report, (3/3/2009)
- PowerPoint presentation, An Update on re-Engineering Issue and Corrective Action Management, Terry C. Lowe, CAO-Performance Improvement (3/4/2009 and 3/16/2009)
- Contractor Assurance Office – Deployment (CAO-D) organization chart (2/23/2009)
- Institutional Leaders Organizational Chart (2/26/2009)
- Handout (uncontrolled), LANS Management Review Boards (12 pp), (Revised December 2008) - source document unknown
- SD100, Integrated Safety Management Description (12/3/2008)
- PD311, Requirements System and Hierarchy (10/04/2007)
- P328-4, R0, Management Observation and Verification (12/11/2008)
- PD328, R1, LANL Assessment Program (12/10/08)
- P328-1, R1, Annual Assessment Plan and Integrated Assessment Schedule Development and Maintenance (12/10/2008)
- P328-2, R1, Independent Assessment (01/06/2009)
- P328-3, R1, Management Assessment (01/06/2009)
- Minutes from 3/11/2009 ADBS Management Review Board meeting.
- PowerPoint presentation, “Issues and Corrective Action Management (ICAM) System Fundamentals, Course #40340, Managing Issues in LIMITS, Course #33300)
- ISD 322-6.0, LANL Causal Analysis and Trending Manual, no Revision number, (07/27/2006)
- ADSS MRB Agenda/Minutes, for Management Review Board meeting held 3/17/2009
- PAAA, WSH, and Information Security Overview, Self-Study #47656 (November 2008)
- Contractor Assurance Office (CAO-OFF) organization chart (2/9/2009)
- LANL working papers and notes, including discussion and planning materials for 9/18/2008 FY09 Director’s Institutional Assessment Planning Meeting (CD)
- LANL Functional Management Assessment report, Contractor Assurance System, Doc # 2007-4530, R0, (09/08/2008) (Business Sensitive)
- Functional Management Assessment report, CAS Self-Assessment, Doc # FM-07-02 CAO, Rev Final, (09/18/2007) (Business Sensitive)
- Read ahead package for 3/17/2009 Institutional Management Review Board meeting
- DMAIC Report For Reducing the Cycle Time of the Issues and Corrective Action Management (ICAM) Process, (5/12/2008)
- ADESHQ MRB Agenda and handout for MRB meeting held 3/17/2009
- AD-NHHO Management Review Board Meeting agenda and handouts for MRB meeting held 3/10/2009
- Performance Improvement (CAO-PI) Administrative Procedure, “Review of Proper Application of Issue Risk Category”, CAOPI-IM-02, R0 (10/2008)
- Associate Director for Security and Safeguards (ADSS) Management Review Board (MRB) Charter, (undated – but a handwritten note on the cover sheet indicates this was approved by MRB 10/2/07)
- ADSS MRB Agenda, (2/3/2009)

- EWMO Management Review Board Meeting Agenda (3/18/2009) and associated handouts
- ADEP Management Review Board agenda (3/18/2009)
- PD322, R0, Issues and Corrective Action Management, (12/02/2008)
- P322-3, R0, Manual for Communicating, Investigating, and Reporting Abnormal Events (12/11/2008)
- P322-4, R4, Issues and Corrective Action Management (1/26/2009)
- Contractor Assurance Office Memorandum, CAO-09-074, “2nd Phase of Assessment of the Issues Intake Process” (2/19/2009)
- Performance Improvement (CAO-PI) Administrative Procedure, “Corrective Action Plan Evaluation”, CAOPI-IM-01, R0 (10/2008)
- Contractor Assurance Office – Performance Improvement (CAO-PI) report, “2008 Fourth Quarter Evaluation of Corrective Action Plans” (9/3/2008)
- CAS Re-Engineering High Level Process Flow” diagram (DRAFT) (undated)
- PowerPoint presentation, FY09 PEP February Status Report – LASO Briefing: March 19, 2009, LA-CP-09-00304
- Director’s Management Review Board (DIR-MRB) Charter (June 2007)
- Report, “2008 Third Quarter Review of Issue Risk Categorization, (3/17/2009)

INTERVIEWS CONDUCTED:

- CAO-D representatives (ADBS, IMRB, ADSS, ADEP, ADNHHO, ADESHQ, Director’s office)
- LASO CAS Program Manager
- LASO Facility Representative Team Leader
- LASO Assistant Manager for Safety Operations
- LANL, Team Leader, ICAM Process Cycle Time Improvement Process Improvement Project team
- LANL, CAO-PI staff (3)
- LANL, CAO-D Group Leader
- LANL, CAO-PI Group Leader
- LANL, Contractor Assurance Officer
- LANL, Deputy Contractor Assurance Officer
- Several managers and participants of the ADSS MRB meeting of 3/17/2009 and AMNHHO/EWHO MRB meeting of 3/18/2009

OBSERVATIONS:

- ADSS Management Review Board (MRB) meeting (3/17/2009)
- Institutional MRB meeting (3/17/2009)
- ADEP MRB (3/18/2009)
- ADNHHO/EWHO MRB (3/18/2009).
- ASO/LANS February FY09 PEP performance review interface meeting

Appendix 4: Review Team Composition

Name	Organization	CRAD Assignment
Al MacDougall	NNSA/SC/OTS	Team Leader
Jeff Roberson	NNSA/NA-171.3	Deputy Team Leader
Alam Mozumder	NNSA/SC/NSSD	Lead CRAD 1
Lynn Maestas	NNSA/SC/NSSD	Lead CRAD 3
Johnnie Nevarez	NNSA/SC/NSSD	Lead CRAD 2
Don Seaborg	NNSA/NSO	Lead CRAD 4
Marshall Young	NNSA/NA-171.3	Support CRAD 3
Ta'keira Atkins	NNSA/NA-171.3	Support CRAD 3