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National Nuclear Security Administration

Department of Energy
National Nuclear Security Administration
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SEP 11 2007

CERTIFIED MAIL – RESTRICTED DELIVERY – RETURN RECEIPT REQUESTED

This is in final response to your Freedom of Information Act (FOIA) request dated January 26, 2007, for ***"a copy of the most recent two annual performance reviews for Pantex Site, Kansas City Site, Sandia Site, Los Alamos Site, Y-12 Site and Livermore Site."***

I contacted the Site Offices who have oversight responsibility for the records you requested, and they are enclosed. Please note that information has been removed from portions of these documents, pursuant to Exemption 2, United States Code, Section 551(b)(2) (Exemption 2 of the FOIA).

Exemption 2 of the FOIA protects information "related solely to the internal personnel rules and practices of an agency." The courts have interpreted the exemption to encompass two distinct categories of information: 1) internal matters of a relatively trivial nature, often referred to as "low 2" information; and 2) more substantial internal matters, such as critical infrastructure information, the disclosure of which would risk either circumvention of a legal requirement or disruption of a critical operation/activity—often referred to as "high 2" information. As described below, portions of the document are being withheld pursuant to Exemption "high 2."

The Exemption 2 information that was deleted from these documents pertains to infrastructure information. It is believed that if any of the information described above was released, it could benefit adversaries by helping them identify possible program impacts and vulnerabilities, as well as provide them the opportunity to target these facilities. This information is predominantly internal and has not been released to the public. Disclosure of this information could possibly expose this department, as well as other departments/organizations, to a "significant risk of circumvention of agency regulations or statutes."

The Department of Energy (DOE) regulations provide that documents exempt from mandatory disclosure under the FOIA shall be released regardless of their exempt status, unless the DOE determines that disclosure is contrary to public interest. For the reasons described above, I have determined that release of the information described above is not in the public interest.

Pursuant to 10 CFR, Section 1004.7(b)(2), Ms. Tracy Loughead is the individual responsible for the withholding of information pursuant to Exemption 2 of the FOIA.

Pursuant to 10 CFR, Section 1004.8, the denial of a FOIA request may be appealed, in writing, within 30 days after receipt of a letter denying any portion of the request, to the Director, Office of Hearings and Appeals, Department of Energy, 1000 Independence Avenue, SW, Washington, DC 20585. The written appeal, including envelope, must clearly indicate that a Freedom of Information appeal is being made, and the appeal must contain all other elements required by 10 CFR, Section 1004.8. Judicial review will thereafter be available to you in the District of Columbia or in the district where: (1) you reside, (2) you have your principal place of business, or (3) the Department's records are situated.

There are no fees chargeable to you.

If you have any questions, please contact Ms. Shirley L. Peterson by telephone at (505) 845-6393, by email at speterson@doeal.gov, or write to the address on the first page. Please reference Control Number FOIA 07-024-P in your communication.

Sincerely,

Carolyn A. Becknell
Freedom of Information Act Officer
Office of Public Affairs

Tracy Loughead
Manager
Office of Public Affairs
Denying Official

Enclosures

National Nuclear Security Administration

DEPARTMENT OF ENERGY
NATIONAL NUCLEAR SECURITY ADMINISTRATION
LOS ALAMOS SITE OFFICE

FY2005 ANNUAL PERFORMANCE APPRAISAL

OF THE

UNIVERSITY OF CALIFORNIA'S

MANAGEMENT AND OPERATION OF

LOS ALAMOS NATIONAL LABORATORY

Los Alamos
NATIONAL LABORATORY

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I. INTRODUCTION

This report was produced by the U.S. Department of Energy (DOE) National Nuclear Security Administration (NNSA), Los Alamos Site Office (LASO) to provide the University of California (UC) with the LASO Site Office Manager's evaluation of the Fiscal Year (FY) 2005 Performance of the Los Alamos National Laboratory (LANL).

For FY2005, NNSA had direct oversight responsibility for the contract between the Federal Government and the University of California. NNSA's mission is to carry out the national security responsibilities of the DOE, including maintenance of a safe, secure and reliable stockpile of nuclear weapons and associated materials capabilities and technologies; promotion of international nuclear safety and nonproliferation; and administration and management of the naval nuclear propulsion program.

This contract (Contract No. W-7405-ENG-36) utilizes a performance-based management system for Mission and Operations functions and is described in Appendix F of the contract. Appendix F defines the objective standards of performance agreed to by NNSA and the UC. UC is eligible to earn program performance fee based on their performance against these objective standards of performance.

The primary objective of this report is to provide the annual written assessment by the NNSA Manager of the Los Alamos Site Office of the contractor's performance for FY2005 and the amount of earned Program Performance Fee as specified in contract clauses H.007 and H.014.

The UC and LANL provided a report to NNSA self-assessing its performance for FY2005. NNSA used the contractor's self-evaluation report as a major contribution for the annual appraisal of the Laboratory's performance, recognizing that NNSA did take into account other pertinent information, including operational oversight and internal and external program reviews and audits.

The NNSA Site Office used the expertise of officially designated NNSA Contracting Officer Representatives (COR) to validate the Contractor's self-assessment and to provide written evaluations of their determinations on LANL's performance. The evaluations of the CORs and other Federal Program Manager inputs were significant factors in the Site Office Manager's evaluation of the contractor's performance.

II. AWARD FEE RECOMMENDATION

The NNSA Los Alamos Site Office Manager reviewed and discussed his recommendations with NNSA Contracting Officer Representatives (COR) and other Federal Program managers and staff concerning the FY2005 University of California performance in the management and operations of the Los Alamos National Laboratory.

The LASO Manager was responsible for validating contractor performance and providing recommended ratings and or recommended earned fee amount to the NNSA Management Council and the Fee Determining Official (FDO). The FDO was the NNSA Administrator and he determined the final performance rating and earned fee for this contractor.

A rating of Outstanding was approved by the FDO for the Mission portion of the contract and a Satisfactory rating was approved for the Operations portion. The Outstanding rating for Mission earned $3,120,000 and the Satisfactory rating in Operations earned $832,000 for a total of $3,952,000 in "At-Risk Fee."

For the FY2005 annual evaluation period, the amount of $3,500,000 was earned Base Fee. Together with the $3,952,000 earned At-Risk Fee, the total earned Program Performance Fee by UC for the FY 2005 evaluation period was $7,452,000.

III. ADJECTIVE RATINGS AND DEFINITIONS EFFECTIVE FOR THE FY2005 EVALUATION CYCLE

PERFORMANCE OBJECTIVES 1 THROUGH 6 – MISSION

Performance Evaluation Category	Adjectival Description and Rating			
	Outstanding	**Good**	**Satisfactory**	**Unsatisfactory**
Mission: Overall Performance	Clear evidence of the highest level of performance in most areas that would be ranked as "best in class" or comparable to the highest performing peers.	Clear evidence of a high level of performance in most areas that is comparable to high performing peers.	Performance is comparable to average performing peer groups.	Performance in most areas is significantly below average performing peer groups.
Mission: Performance Against Milestones	Work exceeds negotiated customer expectations in most areas (for work under change control, completed ahead of schedule and within budget).	Work exceeds negotiated customer expectations in many areas (for work under change control, some areas are completed ahead of schedule and within budget).	Work meets negotiated customer expectations in most areas (for work under change control, most work done on schedule and within budget but some may have been completed with documented failures to keep to schedule or budget).	Work does not meet negotiated customer expectations in most areas (for work under change control, performance causes substantive delays toward completion, significant schedule lapses, or large budget overruns for important programmatic activities).
Mission: Need for Improvement	Performance in all areas is at least at a high level.	While there may be need for improvement in some elements, overall performance in the mission areas is at a high level.	There may be need for improvement in some elements – deficiencies do not substantively affect overall performance.	Deficiencies are serious, and may affect overall performance. Prompt corrective action is required in most areas with immediate senior management attention.
Mission: Sustainability	Work is performed in a manner that strengthens the institution, builds core competencies, and contributes to its longer-term vigor.	Work was done in a manner that benefits the institution's scientific capability and contributes to the quality of science.	Work maintains but does not add to the institution's capability. Management attention is needed to rise to the next level of performance.	Performance reflects poor quality of science and weakens the institution.
Mission: Evaluation/ Improvement Process[1]	A fact-based, systematic evaluation and improvement process is in place and implemented for most areas.	The beginning of a systematic approach to evaluation and improvement in most areas is evident.	Early stages of a transition from reacting to problems to a systematic evaluation process and a general improvement orientation are evident.	Little evidence of a systematic evaluation process or an improvement orientation; improvement is achieved through reacting to problems.

[1]The rating will consider the results achieved and the level of improvement achieved by the contractor. This will be accomplished by utilizing the methodology above.

III. ADJECTIVE RATINGS AND DEFINITIONS EFFECTIVE FOR THE FY2005 EVALUATION CYCLE

PERFORMANCE OBJECTIVES 7 THROUGH 10 - OPERATIONS

Performance Evaluation Category	Adjectival Description and Rating			
	Outstanding	**Good**	**Satisfactory**	**Unsatisfactory**
Operations: Overall Performance	Significantly exceeds the operational performance expectations including tasks and deliverables.	Exceeds the operational performance expectations including tasks and deliverables.	Meets the operational performance expectations including tasks and deliverables.	Significantly below the operational performance expectations including tasks and deliverables.
Operations: Performance Against Milestones	Work exceeds the negotiated customer expectations in most areas (for work under change control, completed ahead of or on schedule and within budget).	Work exceeds the negotiated customer expectations in many areas (for work under change control, some areas are completed ahead of schedule and within budget).	Work meets the negotiated customer expectations in most areas (for work under change control, most work done on schedule and within budget but some may have been completed with documented failures to keep to schedule or budget).	Work does not meet negotiated customer expectations in most areas (for work under change control, performance causes substantive delays toward completion, significant schedule lapses, or large budget overruns for important programmatic or operations activities.)
Operations: Need for Improvement	Performance in all operational areas is at least at a high level.	While there may be need for improvement in some elements, overall performance in operational elements is at a high level.	There may be need for improvement in some elements, - deficiencies do not substantively affect overall performance	Deficiencies are serious and may affect performance in other areas and overall mission results or result in serious safety, security, or business problems. Prompt corrective action is required in most areas with immediate senior management attention.
Operations: Evaluation/ Improvement Process[1]	A fact-based, systematic evaluation and improvement process is in place and implemented for most areas.	The beginning of a systematic approach to evaluation and improvement in many areas is evident.	Early stages of a transition from reacting to problems to a systematic evaluation process and a general improvement orientation are evident.	Little evidence of a systematic evaluation process or an improvement orientation; improvement is achieved through reacting to problems.

[1]The rating will consider the results achieved and the level of improvement achieved by the contractor. This will be accomplished by utilizing the methodology above.

IV. EXECUTIVE SUMMARY AND OVERALL APPRAISAL RESULTS

Mission		Outstanding
1.	Conduct warhead certification and assessment actions using a common UC Design Laboratory Strategy.	Outstanding
2.	Develop with NNSA and implement long-term, balanced, integrated stewardship.	Outstanding
3.	Develop with NNSA and implement near-term balanced weapon programs that are coordinated with the other NNSA M&O contractors and DoD customers and that foster complex-wide solutions to meet the needs of the U.S. nuclear deterrent.	Outstanding
4.	Implement an integrated science and technology-based program aimed at preventing the proliferation or terrorist acquisition of weapons of mass destruction as well as detecting and responding to their deployment or use.	Good
5.	Enhance and nurture a strong science, engineering, and technology base in support of national security strategic objectives.	Outstanding
6.	Optimize current and evolving mission performance by providing effective and efficient facilities and infrastructure.	Good

Operations		Satisfactory
7.	Utilize UC strengths to recruit, retain, and develop the workforce.	Outstanding
8.	Maintain safe, secure, environmentally sound, effective, and efficient operations in support of mission objectives.	Satisfactory
9.	Improve or maintain effective business processes and systems that safeguard public assets and support mission objectives.	Good
10.	Sustain and/or implement effective Community Initiatives.	Outstanding

After a difficult year (FY2004) in both performance and fee award, the Laboratory worked many of its difficulties and recovered from Unsatisfactory performance in Operations. It is considered Outstanding in its performance of NNSA Mission related work.

The NNSA is committed to ensuring the long-term reliability, safety and security of the national nuclear deterrent. NNSA weapons are aging and are being rebuilt now in life extension programs. The Laboratory made outstanding progress in the application of the Quantification of Margins and Uncertainties (QMU) methodology to major warhead assessments including the W76-1 Life Extension Program (LEP) and the W88 Major Assembly Release (MAR). The interactions, understanding, and progress between Los Alamos and Lawrence Livermore National Laboratory (LLNL) during this fiscal year culminated in a number of positive external reviews. A common UC Design Laboratory Strategy has been established and is contributing to the certification and assessment of the stockpile.

The Laboratory accomplished a number of significant advances toward establishing long-term and balanced stewardship. The Laboratory invested considerable effort in integrating Advanced Scientific Computing (ASC) and dynamic experiments for development of long term planning horizons. These planning efforts include the Plutonium Strategy and the Primary Certification and Capability Plan. These plans were used in FY2005 and will be used in the future as the basis for investment decisions stockpile stewardship tools. The planning efforts will ensure that modeling and experimental capabilities are coordinated to support and validate certification methodology and to maximize progress to meet longer-term requirements. The Laboratory achieved significant progress towards understanding specific nuclear weapons physics regimes that will support the Stockpile Stewardship Program and provide increased confidence in future assessments of the stockpile.

Despite the impacts of the 2004 four-month work suspension at LANL, program and line personnel restored the momentum of the weapons program, recovered schedules and achieved programmatic milestones for FY2005. Laboratory-responsible surveillance tasks were completed, a major portion of surveillance backlog was eliminated, and management of Significant Finding Investigations (SFIs) was improved.

The Laboratory met all Integrated Weapon Activity Plan (IWAP) deliverables in support of the B61, W76 and W88 Seamless Safety for the 21st Century projects. The Laboratory worked closely with Pantex to develop processes/procedures and provided timely weapon response analyses for multiple emergent technical issues that arose during normal work activities at Pantex.

The Laboratory's performance in reducing threats to the United States through development and application of technology, information, and expertise, both domestically and internationally, was generally of high caliber. This work requires a broad range of expertise in varied technological areas to meet the needs of the broad range of customers sponsoring this work. Responses from NNSA and other sponsors reflected significant accomplishment by LANL staff in meeting and exceeding technical requirements. There were some performance issues identified by sponsors discussed later in this report.

The Laboratory produced Outstanding performance on maintaining a strong scientific and technology portfolio, which supports maintenance of the U.S. technological edge, and supports broad national needs. LANL is one of the few federally funded laboratories with a research outlook in excess of ten years. As such, they carry a significant responsibility for ensuring the United States technological edge in a variety of areas, including national security. This science base is at the core of the NNSA mission and, more broadly, the missions of DOE.

The Laboratory's performance in optimizing current and evolving mission performance by providing effective and efficient facilities and infrastructure improved over the previous rating period. Although three of the four measures defining expected performance achieved an outstanding rating with the fourth at good, NNSA assessed the overall performance as good, recognizing issues with maintenance, including Contractor efficiency; Nuclear Material Safeguards and Security Upgrades Project (NMSSUP) Phase II; and the Waste Management Risk Mitigation project.

The Laboratory developed a strategy as outlined in the Ten-Year Comprehensive Site Plan (TYCSP) for FY2006-FY2015, which should result in a sustainable and more responsive infrastructure within a reduced footprint that can fully support NNSA and LANL nuclear weapons program objectives. A responsive infrastructure must provide capabilities, on appropriate timescales and be in support of Department of Defense (DoD) requirements.

In addition to these longer-term efforts, LANL was in the process of implementing an Earned Value Management System (EVMS) and common Work Breakdown Structure (WBS) for facility management. These are considered necessary first steps for improving LANL's maintenance practices.

Facilities Infrastructure Recapitalization Program (FIRP) performance met the requirements for an outstanding in FY2005; however, significant management attention is required in future years. This was due largely to dynamic program demands (for example, pending decisions on the future of the Los Alamos Neutron Science Center (LANSCE) affect FIRP project selection) and changing budget forecasts that affect achievement of deferred maintenance goals.

The Laboratory's Human Resources organization's initiatives undertaken during the fiscal year significantly exceeded the operational performance expectations that included some challenging tasks and deliverables. A period of significant change is underway at the Laboratory making recruitment

and retention more challenging than perhaps at any other time in the Laboratory's history. Employees experienced much uncertainty as the contract for management and operation of the Laboratory was competed for the first time in over 50 years. Despite the challenges, the Laboratory staff continued to make improvements in the human resources system and human resource programs were well managed. LANL identified Recruitment and Retention as a significant goal for FY2005 and a cross-discipline team was formed to identify problems and develop solutions. The Laboratory conducted institution-wide workforce reviews in part to form the basis for staffing and recruitment activities

Of the 26 safety programs that the NNSA evaluated, almost 1/3 (8 out of 26) was evaluated as Unsatisfactory. NNSA views this data as an overall failure of effective application of ISM principles across LANL organizations and facilities. The Laboratory made strides this year in categorization of non-nuclear facilities through field evaluation of 600 facilities, identifying 90 improperly categorized facilities. The Laboratory continues to improve its ES&H corrective action management program and NNSA is hopeful that the Laboratory will expand the capabilities that currently reside in the institutional areas to the lower tier organizations and facilities.

Consistent implementation of quality requirements overall within the Laboratory is in the early stages within many organizations. While the specific performance criteria have generally been met, with some elements being delivered ahead of schedule, additional efforts are required to achieve results in a fully implemented institutional quality program. The Laboratory is to be commended for the proactive manner they have employed during FY2005 to accomplish those initiatives achieved.

The Laboratory committed a minimum of 57 Technical Safety Requirements (TSR) violations at its operating nuclear facilities. A majority of the TSR violations were directly traceable back to a failure to adequately implement safety controls because, once approved, they were never formally verified as working. There is no single higher safety priority than having safety controls working because if they are not, then they will not be available to protect the workers and the public when an accident occurs. Safety controls not working at LANL is an endemic problem.

The Laboratory's environmental performance improved over that of FY2004 although there are a number of significant issues to be worked. Regulatory compliance was good. The Consent Order brought some closure to Environmental Restoration. UC's Cost Performance Index and Schedule Performance Index for FY2005, however, were considered Unsatisfactory for the legacy clean-up projects at the Los Alamos National Laboratory. A number of issues must be resolved, such as inadequate safety basis and improving nuclear safety. The Laboratory senior managers failed to take a holistic approach to some critical activities and have failed to deliver on a number of deliverables, such as an integrated Authorization Basis schedule, even after a number of reminders. LANL has not provided a solid and integrated plan of action for recovery on its Nuclear Waste Infrastructure Services Division (NWIS) Transuranic (TRU) Waste Management activities.

The Laboratory's Safeguards and Security (S&S) Program showed significant levels of improvement in FY2005 achieving good levels of performance overall while some high priority areas achieved outstanding levels of performance. In NNSA's FY2005 Annual Survey Report, LANL's overall S&S Program was rated Satisfactory (highest possible rating). The Survey noted numerous strengths that assure the protection of all DOE/NNSA assets at LANL. These strengths included ownership and implementation of security requirements by senior line management; the adoption and implementation of the Deployed Security Model; many formal communication forums; and the hiring and retention of many highly qualified subject matter experts. These strengths were evidenced by the successful execution of the DX hydrodynamic experiments, stand-up of 19 institutional ACREM libraries and corresponding operations, support for the TA-18 Early Move project, the outstanding Protective Force operations, and the use of an Earned Value Management system related to budget planning and execution.

Generally, the Laboratory maintained effective business processes and systems during the fiscal year and implemented a number of initiatives to improve the effectiveness of all its systems. The on-going effort to complete the implementation of an internal control program will provide additional assurance of the effectiveness of business and financial management processes, systems and practices that will safeguard public assets.

UC and LANL realized success in implementing effective community initiatives in FY2005. The Laboratory sustained and expanded upon its outreach methods with science education, economic development and corporate citizenship and launched new efforts to better assess, integrate, and improve the effectiveness of their outreach activities.

The Laboratory continued its proactive efforts to maintain close ties with northern New Mexico communities. The Laboratory formed a Coordination Council to effectively address outreach activities and to make better use of the annual Community Leaders Survey to identify and understand the needs of the community.

V. PERFORMANCE SUMMARIES BY OBJECTIVE AND MEASURES

MISSION: OBJECTIVES 1.0 – 6.0

OBJECTIVE 1.0
Conduct warhead certification and assessment actions using a common UC Design Laboratory Strategy

Objective 1.0 was rated as Outstanding for FY2005.

This objective drove Laboratory performance in certification and assessment of the nuclear weapons stockpile. The common design laboratory strategy is known as Quantification of Margins and Uncertainties (QMU). The performance measures for this objective address continuing refinement of the strategy, of QMU to stockpile issues, and the Annual Assessment program.

During the performance period the Laboratory accomplished several significant actions related to this Objective: completing a joint Los Alamos National Laboratory/Lawrence Livermore National Laboratory paper describing the physics certification methodology that incorporates the quantification of margins and uncertainties; using QMU to predict primary performance and identify major sources of uncertainty for the W-76-1 Life-Extension Program (LEP); developed probabilistic tools and methods to combine various sources of uncertainty for primary performance; completed a QMU assessment of the strength and damage model; and completed all annual assessment reporting deliverables on or ahead of schedule in accordance with the NNSA NA-10 tasking letter and the FY2003 National Defense Authorization Act. Throughout the weapons activities, independent review groups such as the JASONs, the Strategic Advisory Group Stockpile Assessment Team (SAGSAT), and Division and Program Review Committees provided very positive comments on Laboratory performance in certification and assessment of the nuclear weapons stockpile.

Measure: 1.1
***Use progress toward quantifying margins and uncertainties, and experience in application to further refine and document the certification methodology.**

Measure 1.1 was rated as Outstanding for FY2005.

The intent of this performance measure was to demonstrate a clear management commitment in establishing a formal certification methodology and clearly identifying performance gates required for certification.

During this performance period, the Laboratory made significant progress refining the Quantification of Margins and Uncertainties (QMU) concept as a tool for certification and assessment of the stockpile. The completion of the Joint (LANL/LLNL) Design Laboratory White Paper on Certification incorporating QMU was a significant accomplishment that established a consistent framework for certification and assessment of the stockpile.

Significant Accomplishments
- Created unified QMU Tools & Methods Project Team.
- Completed QMU Tools & Methods Project Plan for the quantification of margins and uncertainties.
- Hosted joint LANL/LLNL workshop on a QMU-based physics certification methodology details and results of this workshop are in part embodied within the primary certification plan, which was published and briefed to NNSA.
- Completed joint LANL/LLNL paper describing the physics certification methodology that incorporated the quantification of margins and uncertainties.

* Joint LANL/LLNL Performance Measures

- Affirmative feedback from external reviews (e.g., JASONs, USSTRATCOM SAG/SAT, X Division Review Committee (DRC), Principal Associate Directorate for Nuclear Weapons Programs (PADNWP) Program Review Committee (PRC)).

Measure: 1.2
Demonstrate application of a common assessment methodology using Quantification of Margins and Uncertainty (QMU) in major warhead assessments.

Measure 1.2 was rated as Outstanding for FY2005.

This performance measure required Laboratory programs that ensure that stockpile warhead issues are assessed in a rigorous, objective, and comprehensive manner and that these assessments are communicated to the larger nuclear weapons community in a transparent and convincing manner and the physics certification methodology that incorporates QMU will be systematically used in major warhead assessments. "Major warhead assessments" will include but not limited to formal certification actions, assessments of significant changes to warheads or the effect of new requirements (e.g., new Stockpile-to-Target Sequences), and resolution of issues that arise from surveillance or ongoing R&D. Where practicable, QMU will be applied to physics design, engineering, and materials issues.

The Laboratory demonstrated the use of Quantification of Margins and Uncertainties (QMU) as an assessment tool for stockpile issues and utilized QMU to review several real-world issues to assess impacts to warhead performance, such as the Y-12 Case Weld Issue and the potting void Significant Finding Investigation (SFI). QMU was used throughout design and analysis of the W-76-1 physics package modifications, facilitating completion of Phase 6.3 of the Life Extension Program, and was viewed as the corner stone tool for LANL designs for the Reliable Replacement Warhead (RRW). The Laboratory routinely received positive reviews for certification methodology from external reviews such as the SAGSAT, the JASON's, and the X Division Review Committee.

Significant Accomplishments

- Predicted primary performance and identify major sources of uncertainty for the W-76-1 LEP.
- Released Project B code to support of W-76-1 LEP primary design.
- Released Project A code in support of W-76-1 LEP secondary design.
- Developed probabilistic tools and methods to combine various sources of uncertainty for primary performance.
- Completed a QMU assessment of strength and damage model.
- Completed Code Verification, Calculation Verification and Solution Error Analysis for LANL Physics and Engineering Codes.
- QMU applied to potting SFI.
- Unconditional pass at W-76-1 FDR where QMU was applied in the changes in the LEP.
- QMU applied in annual assessment.
- Affirmative feedback from SAGSAT (pit cert) and JASONs (pit lifetime & ignition), XDRC, and PRC.

Measure: 1.3
Complete the annual assessments of the safety, reliability, and performance of all warhead types in the stockpile to include whether nuclear testing is required for resolution of any issue and to support NNSA as required during interagency and community coordination of the Annual Assessment Process.

Measure 1.3 was rated as Outstanding for FY2005.

This performance measure required the submission of products to document completion of assessments of safety, reliability and performance of nuclear warhead components for which LANL was the responsible design agency and to support the continuing certification of those warheads. The annual assessment delivery schedule was defined in an NNSA NA-10 tasking letter. The Laboratory completed their Annual Assessment activities and deliverables on time or ahead of schedule, incorporating several quality improvement initiatives that led to a superior product.

Significant Accomplishments

- Completed all annual assessment reporting deliverables on or ahead of schedule in accordance with the NA-10 tasking letter and the FY03 National Defense Authorization Act.
  - Annual assessment reports (B61, W76-0, W78 and W88)
  - Director's annual assessment letter
  - Director's Red Team report and briefing
- Completed annual warhead briefings to USSTRATCOM Stockpile Assessment Team (SAT).
- Submitted inputs to November 2004 and May 2005 Warhead Reliability Reports.

OBJECTIVE 2.0
Develop with NNSA and implement long-term balanced, integrated stewardship.
Objective 2.0 was rated as Outstanding for FY2005.

This performance object focused on Laboratory program's development of tools and techniques that will support Science Based Stockpile Stewardship. The individual performance measures drove performance in experiments and techniques that provide data for simulations, platforms and codes for simulations, and future large-scale experimental facilities.

The Laboratory achieved remarkable accomplishments that will support and focus the Stockpile Stewardship program of the future for enhanced and responsive analysis of the enduring stockpile. Laboratory accomplishments provide the initial data and tools to address the pit lifetime questions and position LANL to continue integration of experimental data and simulation to address stockpile issues.

Measure: 2.1
Support the needs of warhead assessment, certification and simulation validation by executing a coordinated program of targeted small- and large-scale experiments and mining of archival UGT data to improve predictive capability. Develop and execute a program of hydrotests and subcritical experiments that addresses assessment and certification needs.

Measure 2.1 was rated as Outstanding for FY2005.

This performance measure required LANL to improve the understanding of the functioning of nuclear weapons, incorporate that knowledge in predictive tools (especially legacy and ASC codes), and make that predictive capability available to the weapons design community to enable improved decision-making capability for annual assessments and certifications. To successfully accomplish the expectations for this measure LANL provided the data needed to validate predictive capability through integral experiments and comparison with archival underground nuclear test data. The accomplishments listed below were evidence of this performance.

Significant Accomplishments

- Data taken and models implemented in ASC code to complete assessment of a priority SFI.
- Delivered coordinated implementation plan for Pu strategy.
- Conducted a NNSA workshop on ejecta, and incorporated into Primary Certification and Pu Implementation Plans (IP).
- Analysis done of measurements of neutron capture cross sections on 234U and 236U using the DANCE detector at LANSCE.
- Completed assessment of a strength and damage model.
- Completed assessment of hydro and pRad experiments to advance understanding of secondary energy balance.
- Completed analysis of more than six Nevada Test Site (NTS) events supporting pit lifetime evaluation.
- Conducted experiments supporting new or improved models for high explosives, foams, filled polymers, Pu EOS, Pu aging, Pu and other metal strength and damage, ejecta formation, and boost relevant EOS.
- Completed major hydro tests supporting W76-1 and completed National Hydro Plan.
- Conducted experiments on Accelerated Age samples supporting Pit Lifetime.
- Conducted Leuser confirmatory experiment.
- Measured parameters for new Tensile Plasticity (TEPLA) model.
  - Identified as highest priority by Integrated Project Team (IPT)
  - Supports validation of all weapons systems
- Integrated experimental and simulation activities to support predictive capability.

  - TEPLA Integrated Project Team
  - Integration into Pu IP and Primary Cert Plans
  - Delivered new capabilities in HE, polymers, and materials properties
  - Primary Certification Plan briefed to HQ, well received
  - Integration of experiment, simulation and QMU
- Series of internal and external workshops held to define the Future of LANSCE.
- Successfully completed two spall-damage physics experiments on Atlas at the NTS.
- Very successful Proton Radiography program at LANSCE.
  - New capability and multiple users
- Published new iteration of nuclear weapons science question book.

Measure: 2.2
Conduct design and analysis of nuclear weapons that address the future needs of the U.S. nuclear deterrent.

Measure 2.2 was rated as Outstanding for FY2005.

This performance measure drove Laboratory integration of current manufacturing, certification, weapons code approaches, and quantification of margins and uncertainties (QMU) methodologies to support design and analysis of nuclear weapons that will address future needs of the U.S. deterrent.

The Laboratory accomplished several significant deliverables during the performance period. Especially notable was the performance relative to the Reliable Replacement Warhead (RRW) study. The Laboratory selected four preliminary designs for consideration by the Joint Project Officers Group, and finalized with a program plan and supporting work packages for the next year, including planning for a summer hydrodynamic test shot. The Laboratory leveraged the capabilities across LANL to support the RRW study.

Significant Accomplishments

- Completed Test Priorities and Capabilities Report Timing and Firing Safety Analysis.
- Met all Underground Testing (UGT) readiness milestones.
- Outstanding RRW design and certification strategy progress cited at August 2005 JPOG.
- FY2006 RRW program plan and work packages in place.
- Concurrent engineering through more than a dozen site visits with plants to discuss RRW options.
- Q3-Q4 FY2005 ASC plans altered to incorporate necessary RRW design features in design codes.
- ASC simulation tool maturity transitioning from analysis capable to design-capable with mentoring of new designers by NTS experienced design physicists.

Measure: 2.3
***Develop the requirements for advanced radiographic capabilities to support assessment and certification, and develop or demonstrate supporting radiographic technologies.**

Measure 2.3 was rated as Outstanding for FY2005

The intent of this measure was to develop and use advanced radiography tools for stockpile stewardship. This involves experimental work and the quantitative interpretation of results essential to the mission of LANL, NNSA and the NWC. Several notable achievements were demonstrated; the robust Second Axis replacement cell, Second Axis project Critical Decision 1/2/3a approval and receipt of an outstanding review from the NNSA Technical Review Panel. The Laboratory worked in conjunction with LLNL to conduct radiographic capabilities technology workshops.

* Joint LANL/LLNL Performance Measures

Significant Accomplishments
- Demonstrated robust 2nd axis replacement cell.
- DARHT 2nd Axis Project CD1/2a/3a approved.
- Conducted radiographic capabilities technology workshop w/ LLNL, SNL, and AWE.
- Outstanding grade received from PRC.
- DARHT Second Axis Project resumed highest priority operations February 27th.
- DARHT cell design resoundingly confirmed by the NNSA Technical Review Panel.
- DARHT 2nd Axis successfully transported ~7.1 MeV, 1.3 kilo-Ampere, 1.6 micro-second beam.
- First refurbished DARHT II production cell passed HV Testing in August 2005.

Measure: 2.4
Develop and demonstrate ASC simulation and modeling capabilities that support the ongoing needs of stockpile assessment and certification.

Measure 2.4 was rated as Outstanding for FY2005.

The ASC Program was charged with providing validated predictive capability to increase confidence in the performance, safety, and reliability of the U.S. nuclear stockpile. This predictive capability, founded on advanced material and physics modeling and validated by a robust experimental program, will focus on advanced two and three-dimensional simulations that include both primary and secondary performance and nuclear safety objectives.

The Laboratory's ASC program was successful in demonstrating its contributions to the stockpile assessments and certification by providing two critical enhanced performance codes (with improved models) and the necessary computing power to support the QMU based certification on W76-1 LEP certification; increasing reliance on the ASC simulation capabilities to support the RRW activities and predict experimental outcomes; using ASC capabilities in resolving stockpile production challenges at Y-12 and Pantex; and establishing the QMU tools and methods project under the auspices of the ASC V&V program to ensure ASC plays a key role in stockpile assessment and certification. The ASC earned international recognition for their excellent achievements in combining experimental and computation concepts in structural dynamics. Utilization of the Integrated Project Team concept to address specific stockpile issue proved to be successful and LANL is strongly encouraged to expand this concept across the laboratories and the campaigns. LANL is encouraged to expand the utilization of ASC tools across the complex and in meetings other stockpile needs, including surety.

Significant Accomplishments
- Computer Automated Virtual Environment (CAVE) visualization facility operational, Lightning capacity platform delivered, performance code enhancements and V&V assessments.
- Articulated 100 TFlop requirements.
- New specific transport capability added to Code Project A & B codes.
- Delivered and demonstrated an interface steepening component to Code Project A.
- Model for damage with accompanying data implemented into Code Project B & validated.
- Completed initial primary V&V assessment.
- Lightning computer platform moved into general availability reaching a monthly utilization of > 80%.
- Delivered validation assessment capability for improved-fidelity engineering shock response calculations.
- SCC infrastructure upgrade completed.
- High fidelity nuclear data library (>600 groups) developed & delivered.
- Key software projects assessed; Software Quality Engineering (SQE) policies & procedures documented.
- Demonstrated a robust and accurate 2D-RZ discrete ordinates radiation transport capability.
- Integrated necessary physics, materials and engineering models into primary design codes.

- Deployed Red Storm user environment.
- Campaign 7 W76 output simulations completed.
- IHE reactive burn models implemented in performance codes.
- Simulated casting of the Qual Type 126 pit and compared the results of the simulation to the available experimental data for the same process.
- Performance code releases for W76-1 with numerous physical model and numerical algorithm enhancements and established code pedigree through V&V assessments.
- Reports citing evidence and approval of Level 2 milestone completions.
- Twenty-five TFlop computer clusters installed & operational for SSP simulation support.
- Favorable reviews from Predictive Science panel on predictive simulation progress and JASONs on V&V.
- Simulation support of B61 Alt 357, W76-1 LEP, W88 MAR, and RRW.
- 3625 hydro - best predictive simulations ever.
- Simulation design & analysis of RRW manufacturing (casting) operations.
- Hosting of five-laboratory (LANL, LLNL, SNL, VNIIEF, VNIITF) computational physics conference, the International Conference on Nuclear Data for Science and Technology ("ND2004") with greater than 400 attendees, nuclear data JOWOG, opacity workshop, and mix workshop concerns.

Measure: 2.5

Improve and apply tools and models for prediction of systems, subsystems, and/or component lifetimes.

Measure 2.5 was rated as Outstanding for FY2005.

This measure drove the development and use of ASC codes specific to assessing material and component aging. Data from engineering and science campaigns are used to validate codes. The results of these efforts enhanced LANL's ability to predict component lifetime and to deliver age related information to the design community.

All Level 2 milestones related to improving the ASC tools and models were successfully completed. Of note is the availability of a new transport modeling capability and the aggressive development of the strength and damage model; and the release of the high-fidelity nuclear library. The Laboratory was proactive in defining a plan and a path forward in establishing productivity measures, as well as prioritizing work that would provide tools to address the pit lifetime question. In addition, LANL assisted the Nuclear Weapons Complex by porting and testing one of their key applications code to help Sandia National Laboratories debug the Red Storm computing environment.

Significant Accomplishments

- On track extensive suite of experiments with update on pit lifetime assessments.
- Conducted critical Equation of State (EOS), dynamic strength, and damage tests on Accelerated Aged Pu (AAP) samples to support pit lifetime evaluation.
- Completed theoretical EOS first principles calculations on aged materials.
- Performed molecular dynamics calculations to simulate materials response to shock waves.
- Developed and implemented new capabilities for pit lifetime assessment (i.e. DAC, dilatometry and calorimetry).
- Delivered material for successful completion of Trident experiment.
- Completed revision 1 of the Nuclear Explosives Package Reliability Assessment report.
- Implemented the XTX 8004 function/safety test into high explosives core surveillance at BWXT Pantex.
- Delivered Canned Subassembly (CSA) and case aging assessments.
- Improved NNSA's understanding of the long-term behavior of PBX 9501 including development of preliminary chemical kinetics age-aware models.

- Completed empirical age-aware hyperfoam model, and load/retention and compression set model for S5370, utilizing accelerated aging studies.
- Developed hydride growth model for uranium.
- Favorable JASONs review on Pit Lifetime plans.
- Defined fundamental simulations on Blue/Gene Light with LLNL for pit lifetimes.
- Designer Workshops (LANL/LLNL) successfully provided a basis for coordinated path-forward between LANL/LLNL on pit lifetime milestone.

Measure: 2.6

***Develop and implement a collaborative and complementary program of experiments at High Energy Density (HED) facilities that supports assessment and certification needs.**

Measure 2.6 was rated as Outstanding for FY2005.

Several HED facilities exist (NIF, Z, Trident, and OMEGA) and the Laboratory worked with LLNL in the use of these facilities to support certification through investigation of hydrodynamic instabilities and mix. The hydrodynamic research was part of the stockpile stewardship activities, whose goal was to quantitatively understand the evolution of mix and its impact on Laboratory ignition research. HED research and data were important components in the validation of ASC computer codes. The Laboratory's P Division Review Committee rated the High Energy Density Physics (HEDP) program as Outstanding.

Los Alamos National Laboratory teamed with LLNL to complete analysis and assessments of three campaigns of OMEGA/NIF laser experiments, formally determine required phase plates and working hohlraum geometry for first cluster HEDP experiments on NIF and compare results of NIF Hydro experiments in detail to ASC simulations.

Significant Accomplishments

- Conducted case dynamics and radiation flow experiments on Z machine to validate predictive models.
- Completed analysis and assessment of data from three OMEGA/NIF laser experiment campaigns for complex hydrodynamics.
- Demonstrated acquisition of complex radiation transport data using high-energy backlighter on Z machine by obtaining five images in August 2005.
- Dynamic Plutonium experiments successfully and safely performed on Trident laser returning interesting data and recovered samples.
- Formally determined required phase plates and working hohlraum geometry for first cluster HEDP experiments on NIF.
- Prepared detailed plan for HEDP research FY06-FY11 in response to sever budget cuts.
- Completed design report for planned TALITHA experiment on NIF.
- NIF hydro experimental result compared in detail to ASC simulations.

Measure: 2.7

***Develop and implement an integrated program with a central goal to achieve ignition at NIF in 2010.**

Measure 2.7 was rated as Outstanding for FY2005.

This performance measure required LANL to participate in the national integrated Ignition Plan at NIF, and to develop and implement a self-consistent internal plan for ignition participation that meshes smoothly with the national Indirect Drive Ignition (IDI) plan.

The Laboratory worked very effectively with the other partners in the National Ignition Campaign to determine a project plan for ignition. The Laboratory was the major initial advocate of shifting the NIF ignition focus from diffusion-filled capsules to the simpler, Be-fill tube target. This is now the

baseline target for the National Ignition Campaign. The Laboratory also was instrumental in developing the phase-contrast imaging technique currently used for imaging the frozen Deuterium Tritium (DT) layer in Beryllium (Be) ignition targets.

The Laboratory received credit for accomplishing their work in the face of major budget reductions to the overall ICF Program; in particular, they made the difficult and correct decision to down scope their machined Be work.

Significant Accomplishments

- Specified phase plates for first cluster experiments for NIF.
- Completed the first series of first quad hohlraum experiments on NIF in collaboration with LLNL, including first gas-filled hohlraums.
- Completed unique characterization of impact of tritium on NIF ignition target components using WETF.
- Documented capsule and hohlraum specifications for room temperature transport (beryllium) ignition target designs.

Measure: 2.8

***Develop and implement an integrated program for plutonium capabilities of LANL and LLNL to support the overall NNSA strategic requirements.**

Measure 2.8 was rated as Outstanding for FY2005.

This performance measure highlighted the coordination of plutonium capabilities between the two national laboratories with plutonium facilities. This coordination involved the leveling of mission work between the two facilities; leveraging facility capabilities to meet mission requirements; and transferring staff between facilities to support high priority work.

The Laboratory took steps to mitigate the suspension of activities at Livermore's Superblock facility by importing LLNL Pu Technicians into the LANL Plutonium Facility to perform mission work. LANL and LLNL developed the capability to ship in process pit assemblies to Livermore for performance of the final radiography inspection. This significant effort will be utilized in the near term to mitigate the downgrade of the LANL's TA-8-22 Radiography Facility.

Significant Accomplishments

- Formed UC/LANL/LLNL working group; Terms of Reference and End State Vision;
- Developed a work breakdown structure and schedule for integrating project activities.
- Selected radiography, Pu handlers and machining projects for integration and process improvement.
- Developed a collaborative approach to interfacing pit aging to integrated plutonium activities.
- Developed hedge strategies based on uncertainties of facility availability to support Weapons Programs.
- First unescorted glove box activity at PF-4 by LLNL in August 2005.
  - Required special training, medical and security clearances
  - Training programs established, sigmas transferred
- Shipped two units to LLNL for high-energy radiography in support of certification activities.

OBJECTIVE 3.0
Develop with NNSA and implement near-term balanced weapon programs that are coordinated with the other NNSA M&O site contractors and DoD customers and that foster complex-wide solutions to meet the needs of the U.S. nuclear deterrent.

Objective 3.0 was rated as Outstanding for FY2005.

This objective was focused on Laboratory performance in meeting the immediate needs of the nuclear weapons stockpile. Specific performance measures covered stockpile surveillance, production of weapons components, Life Extension Programs, Weapons Quality programs, technical support to Production Agencies, and responsiveness of nuclear weapons complex.

The Laboratory achieved Outstanding performance in activities supporting this objective. Among the more notable accomplishments are the completion of 100% of assigned production surveillance in accordance with the Production and Planning Directive (P&PD) and reducing the site backlog by 95%; closing six SFIs as scheduled, one high priority; obtaining NNSA authorization for the W-76-1 to enter Phase 6.4 (Production Engineering) in August; developing and executing LANL B61 Alt 357 weld improvement project to assist Y-12 efforts to evaluate changes in production welding; developing alternative B61 Alt 357 design strategies to mitigate production issues with plastic parts and production welding; completing six new pits and obtaining independent quality acceptance on four of these; exceeding all Directive Schedule requirements by >25%; and providing over six specific weapon response studies for Pantex.

Measure: 3.1
Conduct stockpile surveillance activities, investigate significant findings and issues identified in technical assessment reports on a prioritized basis, and establish closure plans for Significant Finding Investigations (SFIs).

Measure 3.1 was rated as Outstanding for FY2005.

The Laboratory made significant progress in both execution and management of the Surveillance Program. The formalized Laboratory-wide coordination by the Significant Finding Investigation Integrated Project Team led to significant progress towards closure of SFIs, including the six closed during this performance period. NNSA expectations for an outstanding rating required completion of 100% of surveillance on new components received from disassemblies, and completion of 50% of the LANL site backlog, closure of SFI according to the approved schedule, and the standup of the SFI IPT.

Significant Accomplishments
- Completed 100% of assigned production surveillance in accordance with the P&PD.
- Reduced site backlog by 95%.
- Closed six SFIs as scheduled, one high priority.
- Monthly SFI-IPT meetings to sustain programmatic emphasis on SFI resolution and closure.
- Issued PADNWP policy to establish SFI IPT and formalize SFI management.
- All high-priority SFIs have detailed NNSA-approved baseline closure plans; all others have tasking closure plans.
- Completed pit surveillance study to identify improvements in pit surveillance, modifications to testing protocols and changes to sampling requirements; briefed senior managers at LANL, NNSA and the NWCSSC; implementation underway.

Measure: 3.2
Deliver on the major milestones for the Life Extension Programs for the W76, the B61-7/11, and the W80-3 in accordance with the joint DOE/DoD phase 6.x process.

Measure 3.2 was rated as Outstanding for FY2005.

The authorization to enter Phase 6.4 for the W-76-1 program was a significant accomplishment for the Nuclear Weapons Complex. This authorization was the culmination of an outstanding effort at the Laboratory to resume hydrodynamic testing operations, as well as significant work by the Weapons Designers to complete experimental design and data analysis to support the Final Design Review and the Inter-Laboratory peer review.

To support development schedules for the B61 Alt 357 after production development issues at two of the Production Agencies, LANL deployed simulation and modeling efforts, as well as material science specialists, to eliminate production issues for plastic parts and to develop welding parameters to create acceptable welds.

Significant Accomplishments

- (W76-1) Completed LANL-responsible milestone deliverables to avoid a change in IMS-approved Phase 6.4 authorization date.
- Completed Final Design Review (FDR) with unconditional approval and Phase 6.3 exit criteria i.
- Began Phase 6.4 activities in accordance with Full-Scale Engineering Development (FSED) baseline schedule.
- Provided hardware that met design definition and completed planned hydrodynamic tests.
- Completed the inter-laboratory peer review in support of transition from Phase 6.3 to 6.4.
- Completed FY2005 certification/qualification activities required to certify with QMU at FPU.
- Completed preliminary DRAAG.
- Obtained NNSA authorization to enter Phase 6.4 (Production Engineering) on 24 August 2005.
- (B61 Alt 357) Laboratory responsible milestone deliverables provided on or before the dates specified in the Project Plan.
- Provided hardware that meets design definition in support of the B61 Alt 357 required tests CPD-1/2, CE-1/2 and AAU-1.
- Participated in the inter-laboratory peer review for transition from Phase 6.3 to Phase 6.4 and submit Laboratory report of results.
- Developed and executed Laboratory B61 Alt 357 weld improvement project to assist Y-12 efforts to evaluate changes in production welding.
- Developed alternative B61 Alt 357 design strategies to mitigate production issues with plastic parts and production welding.
- Supported development of Acorn technology for application to the W80-3 and knowledge transfer activities for W80 weapon system.

Measure: 3.3
Deliver on W88 Pit Manufacturing and Certification Project major milestones.

Measure 3.3 was rated as Outstanding for FY2005.

The Laboratory completed the fiscal year in an Outstanding manner, successfully meeting its milestone for manufacturing six additional certifiable W88 pits and completing the quality acceptance of four of those pits. This goal was accomplished in time to allow completion of an upgrade project for the hot Coordinate Measuring Machine, which may allow this equipment to provide a reliable replacement for an outdated shell contour measurement technique currently in use. The Certification Project continues to meet milestones supporting the FY2007 Level One milestone for the Major Assembly Release of the W88 containing a LANL produced pit. The NNSA balanced the significant

accomplishments of the Laboratory in this area with its concerns and awarded a rating of Outstanding.

One of NNSA's expectations for outstanding, "Downdraft Table ready for hot operations at DAF," was not completed due to priorities directed by the NNSA.

Significant Accomplishments
- Completed the manufacture of a fourth pit from FY 04 (carryover milestone).
- Completed six new pits and obtained independent quality acceptance on four of these.
- Changed the manufacturing process to use all LANL fabricated components in pit manufacturing.
- Developed and published Pit Manufacturing and Certification Integrated Project Plan.
- Completed B61 production study to identify manufacturing process issues.
- Completed preliminary design of Machining, Assembly and Inspection Module for MPF.
- SAGSAT/W88 POG reviewed W88 certification program; provided strong program endorsement.
- Conducted Leuser confirmatory experiment.
- Completed TA-55 Pit Capacity study and delivered to the customer.
- Completed three destructive test evaluations to confirm quality of the manufactured product.
- Completed a retrofit and upgrade of the existing hot Coordinate Measuring Machine (CMM).
- Developed and qualified low energy radiography equipment in PF-4.
- Qualified LLNL high-energy radiography equipment as an alternative to TA-8.
- Completed a data density study to prepare for using a CMM to replace the Sheffield gage.
- Completed fabrication, shipment and testing of a plutonium step wedge at NTS.

Concerns
- Failed to develop comprehensive lifecycle plans for physics design project requirements until the end of FY2005 and still needs to develop this information for the Engineering Functional Testing (EFT) project.
- Continued to have difficulty in releasing a baseline supported by a full suite of project schedules and work packages for FY2006.
- The most meaningful Level 2 certification milestones in FY2005 were forced to slip to FY2006.

Measure: 3.4
Meet directive schedule requirements.

Measure 3.4 was rated as Outstanding for FY2005.

The Laboratory completed or exceeded all NNSA expectations for an Outstanding rating. The War Reserve Manufacturing program recovered rapidly from the LANL stand down and was able to achieve outstanding performance relative to production schedule requirements. The Laboratory demonstrated outstanding performance in support of the Neutron Tube Target Loading mission transfer, a new activity that was directed by the NNSA in the middle of the performance period. Of specific note was LANL's pre-build of targets to support the Activity Transfer to Sandia National Laboratories.

Significant Accomplishments
- Exceeded all Directive Schedule requirements by >25%.
  - Shipped 200 W87 pellet can assemblies against ICO requirements of 177
  - Shipped 1934 packaging and transportation items against ICO requirements of 797
  - 64 detonators and simulants to Pantex against PCD requirements of 64 for B61, W76, W78, W80 and W87 test beds.
  - 807 targets (W76 WR and W80 developmental units) against ICO requirement for 648.
- Met all B61, W78 and W88 LLC deliverables.
- Completed NTTL Activity Transfer Plan (ATP) in partnership with SNL to transfer NTTL mission.

- Disassembled and shipped Loader A to SNL two months ahead of schedule.
- Completed NTTL Essential Activity request and Laboratory Readiness Assessment (LRA) for TA-21 operations.
- Resumed MSAD test fire in support of WR production at Kansas City.
- Submitted Life Extension Option (LEO) tables for FY06 Component Description Document.
- 660 1E36 detonators and 223 3E1As to LLNL to support W80 transfer.

Measure: 3.5

Provide technical support to production complex operations, including the Integrated Weapons Activity Plan (IWAP) and other weapons response analyses.

Measure 3.5 was rated as Outstanding for FY2005.

The Laboratory provided significant and timely support to the Pantex Plant to assist with several issues that developed related to dismantlement of weapons components during the FY2005. LANL received accolades from NNSA/HQ and the Pantex Site Office during the Joint NA-11/12 Tele-video Conferences throughout the year. For an Outstanding evaluation, NNSA required LANL to meet IWAP deliverables for the W76-1, B61 and W88 SS-21 activities as defined in Standing Management Team (SMT) approved project plans on schedule. The Laboratory met these requirements.

Significant Accomplishments

- Submitted SS-21 Hazard Analysis Reports (HARs) to Pantex per IWAP schedule.
  - B61 (28 February)
  - W88 (07 September)
- SMT approved W76-1 SS-21 Milestone 0 (08 July 2005) and Milestone 1 (15 September 2005).
- Provided over six specific weapon response studies for Pantex – including multiple involving weekend work;
  - W56 anomalous unit
  - B61 damaged detonator cable
  - W76 anomalous units
  - W78 anomalous unit
  - Dynamic experiments using HE charges
  - Detonator testing to support Electro-Static Discharge (ESD) concerns
- Completed testing of the 1E33 DCA to various electrical voltages and energy stimuli in support of ESD concerns at Pantex.
- Issued the W88 4T Complete Engineering Release.
- Delivered the W78 JTA6 FPU to Pantex.
- Completed Qualification Stage 1 of the W88 Forward Cap Potting Process.
- Provided Design Agency and Weapons Response support for the B61 damaged detonator cable, W78 anomalous and W76 damaged units.
- Supported several Nuclear Explosive Safety Studies (NESS) and NESS Change Evaluations.
- Supported NNSA/LLNL briefings to DNFSB on W56 HE issue and the weapon response process.
- Performed analysis and provided recommendations to NNSA for B53 dismantlement to address a high priority Air Force request.
- Conducted dimensionally representative dynamic tests of aged HE to validate weapon response models used to modify W76-0 disassembly procedures.

Measure: 3.6

Complete the establishment of, and implement in accordance with NNSA-approved plans, a weapons design and manufacturing quality assurance program consistent with NNSA requirements (QC-1, Rev 10).

Measure 3.6 was rated as Satisfactory for FY2005.

The Laboratory submitted a Quality Assurance Program and Implementation Plan to NNSA as scheduled. However, LANL did not resolve NNSA comments to these guidance documents and as requested, no date was provided when NNSA could expect resolution. Without an approved program and implementation plan, clear expectations are difficult to ascertain and compliance is at risk of being delayed well into FY2007. Targeted tasks were not completed as scheduled. The combination of these situations was the rationale for an overall rating in Weapons Quality of satisfactory.

NNSA remains concerned that the Laboratory was not successful in achieving significant progress towards implementation of QC-1, Revision 10 during FY2005.

Significant Accomplishments

Following development of a Weapons Quality Assurance Program, Implementation Plan, and Gap Analysis, LANL performed an independent self-assessment to determine the accuracy of those analyses. While the results indicated that additional work was needed, the proactive approach to self-evaluation was acknowledged. Several organizations with the Laboratory weapons areas developed quality assurance plans to address work to be performed in those areas to enhance the programmatic emphasis to quality. Those activities included the hydrodynamic experiment, Nevada Test Site, W76 program, Type 125 Build, ESA Division, NMT Division, and DX Division.

While the majority of these plans were not finalized, it is important to recognize the focus on quality initiatives. 205 Division specific procedures were developed and approved for use during FY2005. Additional procedures were in various states of completion, but recognition should be given for efforts in this area.

The Laboratory did address all additional supporting evidence required. Delinquent corrective actions from FY2004 were closed; a self-assessment was conducted of weapons product storage areas; a self-assessment was completed of weapons activities at the Nevada Test Site; a QC-1 training program was developed and implemented; and monthly metrics reports were provided.

Concerns

A Quality Assurance Survey (QAS) 1.0 was performed by NNSA in March 2005 and it was determined that LANL's Weapons quality program did not meet the requirements of QC-1, Revision 10. Monthly meetings were conducted by NNSA to monitor progress and revealed that the Laboratory was not on schedule for corrective actions.

The Laboratory provided monthly reports in a timely manner; however, many response due dates were not met to include high-risk corrective action plans. Multiple corrective action plans were returned for revisions due to a lack of comprehensive analysis.

As discussed in the QAS 1.0 report, product acceptance activities were not performed by Laboratory individuals independent of routine daily quality responsibilities. Clear roles, responsibilities, authorities, and interfaces were not defined as defined in NNSA requirements.

NNSA remains concerned that the Laboratory was not successful in achieving significant progress towards implementation of QC-1, Revision 10 during FY2005.

Measure: 3.7
Develop and execute projects to improve the responsiveness of the design, manufacturing, and testing infrastructure of the integrated nuclear weapons complex.

Measure 3.7 was rated as Outstanding for FY2005.

The Laboratory took a proactive approach to complete all programmatic milestones for three responsive infrastructure studies during the performance period. The Laboratory exceeded NNSA expectations by providing more than six complex special weapons response studies to Pantex to support recovery from anomalous situations.

Significant Accomplishments

- Supported Responsive Infrastructure (RI) realignment at NNSA Responsive Infrastructure Steering Committee (RISC) meetings.
- Hosted NNSA RI visit and fact finding efforts.
- Provided enterprise cost modeling support to NNSA RI visits to all NNSA sites.
- Appointed RI Program Manager and linked to RRW Project Director.
- Responded to the Secretary of Energy's Advisory Board (SEAB) infrastructure study data requests.
- Leaders in DSB Stockpile Transformation Study.
- Stood up RRW program, appointed RRW Project Director and supporting staff.
- Supported three RRW JPOG meetings, including first design review by executive POG committee.
- FY2006 RRW program plan and work packages in place.
- Completed Phase 1 study of Multiunit processing RI project. Positive HQ Review authorized commencement of Phase 2.
- Completed Phase 1 Rapid Response Infrastructure Gas Transfer Systems milestones.
- X-2 responded within one week with high-resolution analysis to set welding specifications for B61 at Y-12.
- Engineering Science and Application Division and DX-2 coupled analysis and experiments to support force restrictions on W76 disassembly at Pantex – high praise from NNSA on responsiveness and scientific integrity.
- LANL/LLNL/Pantex conducted a highly productive technical exchange to advance multi-unit processing initiative (responsive infrastructure project).
- Tested detonator cable assemblies and components to a variety of electrical voltages and energy stimuli to help address electro-static discharge concerns.
- Provided Design Agency and weapons response support for W78 anomalous unit.
- Provide rapid design agency response to Pantex to resolve W76 damaged units (two separate issues).
- Provided Design Agency response to resolve issue with W56 damaged unit.
- Provided rapid response to issue with a B61 unit when a Detonator Cable Assembly (DCA) was damaged during disassembly

OBJECTIVE 4.0
Implement an integrated science and technology-based program aimed at preventing the proliferation or terrorist acquisition of weapons of mass destruction as well as detecting and responding to their deployment or use.

Objective 4.0 was rated as Good for FY2005.

This objective was focused on reducing threats to the United States through development and application of technology, information, and expertise both domestically and internationally. This work included a portfolio of projects requiring a range of expertise in varied technological areas to meet the needs of the broad range of customers sponsoring this work.

The Laboratory's performance in this area and quality of technical work was generally of high caliber. Response from NNSA and other sponsors reflected significant accomplishment by Laboratory staff in meeting and exceeding technical requirements. There were some significant issues identified by sponsors. The Laboratory did not demonstrate proactive management in establishing a staging area for the Offsite Source Recovery Project (OSRP) that effectively shut down the recovery of high-risk Pu-239 radioactive sources. The Department of Homeland Security (DHS) terminated a project conducted by the Laboratory before its completion. The DHS believed that the Laboratory's performance on the project did not produce the expected value for the project to be continued. LANL needs to strategically consolidate resources to better service just a few potential Department of Defense (DoD) customers with selective programs. Specific examples of accomplishments and concerns were detailed within the individual measures. NNSA rated this objective as Good based on quality of work performed, response from NNSA HQ and program sponsors, and forward-looking effort to address future national needs.

Measure: 4.1
Provide technical capabilities to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction; eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons; and enable the implementation of U.S. nonproliferation policy.

Measure 4.1 was rated as Good for FY2005.

The Laboratory's performance in the area of international cooperative activities centered round work performed for the NNSA Office of Defense Nuclear Nonproliferation (NA-20). These programs include support to international material security, detection, policy, and nuclear material conversion. This work impacts national security by securing attractive nuclear material both internationally and domestically, detecting the illicit trafficking of nuclear material, and converting material into forms usable by the power industry. The sponsors in most areas assessed the technical work performed as high quality.

This measure was rated based on quality of work performed and responses from DOE/HQ. A rating of Outstanding was not determined because Laboratory management was not proactive in identifying solutions for, or notifying NNSA's site office or HQ in a timely manner of, their failure to implement the TA-18 Closure Plan requirements that negatively affected the Off-Site Source Recovery Project (OSRP).

Significant Accomplishments

- Provided two major training courses in support of the IAEA and initiated new training in support of an IAEA program to recover radiological sources. Continued to offer and expand training for first responders and developed a catalog of available training for use by interested organizations.
- Demonstrated existing capability and several advanced techniques/technologies for attribution of nuclear device detonations, including high-performance liquid chromatography of environmental

samples, improved cross-sections and databases of nuclear interactions, and enhanced processing of seismic event data for better extraction of information.

- Completed preparations for and received French FS-65 shipping casks containing excess fuel rods, now being stored in PF-4 basement. The fuel rods were left over from the MOX lead test assembly campaign for demonstrating the conversion of weapons materials to fuel for commercial reactors. The Laboratory supported this plutonium disposition effort, under extraordinary circumstances, by also generating and shipping to France the MOX fuel used in the demonstration.
- An effective contributor to USG policy initiatives with respect to Iran and North Korea, provided sound technical support to DOE/HQ efforts to develop new applications for the detection of undeclared nuclear activities, and was an important part of USG cooperation with Russia on counter-terrorism technologies through the Warhead Safety and Security Exchange (WSSX) agreement.
- Provided significant support to NNSA in connection with the Nuclear Suppliers Group (NSG) Plenary meeting, including briefings on the nuclear ambitions of Iran, demonstrations of the LANL-developed Information Sharing System (now accepted by the 45 NSG member's states as the principle mechanism for information sharing), and technical input to the draft US Government delegation position on nuclear technology issues.
- Completed the security technology roadmap outlining strategic safeguards and security capabilities and the supporting technologies required to secure nuclear material assets. The related Tri-lab initiative was briefed to NA-1 and other NNSA officials.
- Recovered domestically hundreds of orphaned/abandoned radioactive sources, as part of the Off-Site Source Recovery Project (OSRP), which would otherwise pose a threat as material for Radiological Dispersion Devices (RDD); and successfully developed a disposal path for sources. Fifty-six drums containing sealed sources have been shipped to Waste Isolation Pilot Plant (WIPP).
- Supported safeguards activities for the BN-350 spent fuel project.
- Supported activities for the Emerging Threats program.

Concerns

- While actual recovery of high-risk radioactive sources (other than Pu-239) remains a highly effective program, the OSRP continued to require a staging area for retrieved radioactive sources that will subsequently be disposed to the Waste Isolation Pilot Plant (WIPP) and elsewhere. This requirement was addressed in the TA-18 Closure Plan approved by Linton Brooks dated October 2004. The Laboratory did not demonstrate proactive management in establishing this staging area. The lack of a staging area effectively shut down the recovery of high-risk Pu-239 radioactive sources. While the Laboratory requested, and received approval for, staging these sources in a transportainer in TA-55, no action was taken to place the transportainer in this location. Only after the NNSA Site Office requested a formal response to this problem did the Laboratory submit a letter providing a suggested path forward. This letter does not address the long-tern needs of the OSRP program.
- There were issues regarding timeliness of procurements and associated deliverables for Second Line of Defense, OSRP, Russian and other programs. Immediate concerns are being addressed by the assignment of an additional, dedicated buyer for nonproliferation programs, and a long-term solution is being discussed between the program and support organizations.
- Support to the Highly Enriched Uranium (HEU) Transparency Program was not of high quality, in particular as pertains to the Laboratory's work on the Blend-Down Monitoring System. Technically, some of this work was less than satisfactory and resulted in poor pieces of equipment being installed on-site. Laboratory staff did not coordinate well with staff at other national laboratories working the same program.
- Very supportive of the implementation of International Atomic Energy Agency (IAEA) safeguards and the Additional Protocol in foreign countries (and is, in fact, a major contributor to DOE's advocacy efforts on behalf of safeguards). However, the Laboratory did not show appropriate

support for the implementation of the Additional Protocol at the Laboratory. In some cases, the Laboratory did not participate in required training and articulated positions contrary to those of DOE/HQ concerning the importance of implementing the Additional Protocol at DOE's weapons laboratories, which was contrary to the explicit guidance of NNSA Administrator Brooks.

Measure: 4.2
Provide scientific research capability that produces cutting-edge R&D as well as the testing and evaluation needed to detect, identify, and monitor proliferation and terrorist-related WMD activities.

Measure 4.2 was rated as Outstanding for FY2005.

This measure centered on work performed for NNSA/NA-22, the Office of Nonproliferation Research and Development. Their mission was to provide space and ground based technical solutions to detect illicit nuclear proliferation activities. The Laboratory addressed this measure by solid strategic planning and forward-looking research and development activities.

This measure was rated Outstanding based on quality of work performed and forward looking effort to address future national needs.

Significant Accomplishments

- On-time delivery of the second Global Positioning System (GPS) Block IIF satellite nuclear explosion monitoring program instrument package, including the combined X-Ray Dosimeter (CXD) and the Verification Sensor (BDV) Flight System 2 instruments, on April 1, 2005. By agreement with NNSA NA-22 and the Air Force, delivery of CXD and BDV flight units three were delayed past the start of FY2006: this will not affect the program due to the delay of the launch of the satellite on which these instruments will fly.
- Progress on the Cibola Flight Experiment (CFE) satellite and payload was nothing less than spectacular, given the short development time line and aggressive technology insertion. CFE represents a strong Laboratory success.
- Achieved steady progress on upgrading their nuclear and radio-chemical analysis capabilities. These capabilities were quite important for the non-proliferation mission, and the Laboratory committed to push these upgrades.
- The Laboratory was on time or ahead of schedule with their deliverables for the hyperspectral imaging program.
- The Remote Ultra-Low Light Imager (RULLI) was successfully deployed for test flights on a surrogate for an Unmanned Aerial Vehicle (UAV) (i.e., a piloted aircraft with a bay that has the form, fit and function of a UAV).
- Delivered models, calibrations and time corrections surfaces for seismic stations and delivered a report entitled *Discrimination of Earthquakes and Mining Blasts Using Infrasound* to AFTAC.
- On-time delivery of two NNSA Knowledge Bases (KBs) for Ground Based Nuclear Explosion Monitoring in November 2004 (Software Tool) and July 2005 (Data Set).

Measure: 4.3
Support the needs of the intelligence community by providing intelligence analysis capabilities and science and technology that improve the nation's ability to detect and thwart proliferation and terrorism.

Measure 4.3 was rated as Outstanding for FY2005.

The Laboratory continued to draw the attention and support from the intelligence community by offering and providing a results-oriented capability. The Laboratory recovered from the 2004 stand-down in their ability to provide the necessary and substantial contributions to the community. This program was particularly important and relevant to National Security and the national well-being.

This measure was rated Outstanding based on continued Laboratory focus on high quality of products and interactions. The Intelligence Community staff at the Laboratory was fully receptive to improvements regarding workflow, communications, project reviews, and other administrative expectations of the NNSA site office. The Laboratory's recovery from the stand-down strengthened the integrity of this body of work at the Laboratory.

Significant Accomplishments

- As a result of necessary infrastructure and personnel base to support the intelligence community, the funding expectations for FY2005 were exceeded.
- Provided infrasound support to U.S. Forces Korea.
- Led the creation of the National Quantum Cryptography Roadmap. This effort defined national-level funding profile that defines a major national initiative.
- Assignment of new Field Intelligence Element (FIE) brought new stability to organization and "raised the bar" for performance.
- Management worked in partnership with NNSA site office management and staff on moving BSL-3 toward operational status.

Measure: 4.4
Develop and support the deployment of technologies and analytical capabilities that strengthen the nation's ability to protect against and respond to terrorist use of weapons of mass destruction and other threats against the U.S. homeland.

Measure 4.4 was rated as Good for FY2005.

Los Alamos National Laboratory Center for Homeland Security (CHS) continued to provide a single point of contact for all Department of Homeland Security (DHS) related programs. LANL set a high standard in transitioning for deployment technologies and analytical capabilities critical to defending the country. Under these programs, scientists and engineers were fully utilized in their technical expertise to address DHS's specific needs. In working in those programs, the Laboratory enhanced their core competence and skill base in addressing problems and looking for solutions related to the Stockpile Stewardship program.

Based on a survey conducted by NNSA NA-116 and the Los Alamos Site Office, the Laboratory scored 79% (satisfactory) in a weighed average DHS survey, which used the total estimated cost for each project compared to the total of the projects. Seven sponsors were selected for the survey. Four responded with the prescribed survey form. Three out of four sponsors responding to the survey had good comments about technical quality, cost, schedule and responsiveness of the projects performed by the Laboratory. The fourth sponsor responded to the survey with unsatisfactory rating to the project, which resulted in its premature termination. The Laboratory disagreed with the technical assessment by the sponsor at the time of project termination and sent a letter to the sponsor to clarify their difference in opinions.

Note: The evaluation of this measure only included Work for Others (WFO)/Other Federal Agencies (OFA) for Homeland Security, and does not include Intelligence WFO.

Significant Accomplishments

- Provided outstanding support to three of the four Department of Homeland Security (DHS) directorates: Science and Technology (S&T), Information Analysis and Infrastructure Protection (IAIP), and Borders and Transportation Security (BTS) in the following major portfolio areas: radiological and nuclear countermeasures; chemical and biological countermeasures; threat and vulnerability testing and assessment; critical infrastructure protection; and information technology assessment. This was evidenced with the FY2005 obligated funds of $51M, a $6M

increase from FY2004. The Laboratory's ability and effort properly served the best interest of NNSA missions and assured production of the best research to the homeland security in the broadest sense.

- LANL positioned itself to provide DHS several cutting-edge capabilities in the radiological and nuclear countermeasures. A good example was development and testing of an algorithm to be used in commercially available radioisotope identifiers. The new algorithm compensates for the effects of shielding, inferring a cleaner gamma spectrum that is easier to interpret.
- Achievements in bioscience through surveillance/response enabled the Laboratory to take a unique and critical role in the national bio-threat risk assessment required by HSPD-10. The Laboratory made great technical progress in addressing pressing technical challenges in support of DHS missions. Many projects related to bio-threat risk assessment, highly multiplexed bio-threat agent detection platform development/application, and development/application of advanced epidemiological modeling capabilities were performed in an exceptional and timely manner.
- Provided strong support to the National Infrastructure Analysis and Simulation Center (NISAC) and Critical Infrastructure Protection Decision Support System in the area of threat and critical infrastructure analysis. The Laboratory supported the NISAC in generating detailed analysis of a hurricane's storm surge, potential damage to infrastructures related to energy, communications, and transportation, and emergency response covering medical to utilities. The analytical results were used by the DHS Secretary to brief the President and to prioritize and triage restoration efforts in New Orleans damaged by Hurricane Katrina. Another example was a partnering sensor technology with U.S. Environmental Protection Agency (EPA), which can analyze the chemical or radiological makeup of the air from a safe distance. This technology (ASPECT) continues to monitor air toxics released from industrial facilities. The most recent event was the deployment to a chemical explosion and fire in New Orleans.

Concerns

- The DHS terminated a project conducted by the Laboratory before its completion. The project, Biological Threat Characterization Program (BTCP) End-to-End Biological Risk Assessment project, had a value of $7.8M and was directly dependent upon the development, acquisition, and integration of valid and interpretable information. The risk assessment process should be rigorous, systematic, dynamic, and responsive. The assessment was time-critical to produce results to support the DHS national biodefense strategy and did have significant impact on risk assessment certainty and biothreat prioritization. The DHS termination was based on the Laboratory's poor performance of the project. The DHS believed that the Laboratory's performance on the project did not produce the expected value for the project to continue and believed also that the draft report the Laboratory submitted as a interim deliverable was neither structured nor written in a manner that allowed the reader to identify key findings, appreciate sources of data, and recognize the basis for assumptions built into the system. The product was well below the standard when compared with the similar products provided by other performers conducting parallel projects and consequently unusable according to DHS. Furthermore, according to DHS, the Laboratory seemed to have trouble meeting the schedule deadline and repeated requests for information and feedback/corrections to be made to the preliminary results went un-accomplished. DHS determined that this termination was in the best interest of the Government because it was apparent from an interim evaluation of the deliverable, that the final product will not provide the value necessary to meet the program requirements in the required time frame.
- Failed in performing one project as noted above, which caused an early termination of the project, may have downstream percussion for similar DHS projects in the future.

Measure: 4.5
Apply advanced science and technology to meet immediate and long-term U.S. defense community needs.

Measure 4.5 was rated as Good for FY2005.

The Laboratory continued to move in a positive direction related to programs in the defense community, though much work remains to be done. Under these programs, scientists and engineers were fully utilized in their technical expertise to address Defense Department (DoD) specific needs. In working in those programs, the Laboratory enhanced their core competence and skill base in addressing problems and looking for solutions related to the Stockpile Stewardship program.
Note: The evaluation of this measure only included Work for Others (WFO)/Other Federal Agencies (OFA) for the Defense community (DoD), and does not include Intelligence WFO.

Significant Accomplishments

- Even though the DoD funding decreased in FY2005 compared to FY2004 (mostly attributable to the emergency operations work that the Laboratory performs for the Defense Threat Reduction Agency (DTRA)), the DoD Programs Office portfolio continued to move in a positive direction. After a growth of 15% from FY2003 to FY2004 for the DoD Programs Office, the level of new funds through the Department of Defense in FY2005 leveled, with about $35M of funding received from all DoD agencies including the Office of the Secretary of Defense, Defense Advanced Projects Agency (DARPA), DTRA, the services (Army, Air Force, Navy, Marines), Strategic Command (STRATCOM), and the Missile Defense Agency. The Laboratory now has R&D projects from all but one of the seven DARPA program offices.
- The Angel Fire Project (wide area surveillance) was aggressively supported by STRATCOM and was poised for deployment. The Laboratory received $1M of funding for an initial demonstration of the Integrated Knowledge Engine developed in the area of Horizontal Integration (HI), which was well received by the sponsor. Outstanding evaluations in the annual program reviews were received from the Office of the Secretary of Defense (OSD) Joint Munitions Project and were identified as the primary provider of energetic munitions chemistry.
- Recognition was received in the area of the "electronic battlefield" component of the Army's Future Combat Systems (FCS) as a leader in high power electromagnetic conventional munitions that can render a complete area as "electronically sterile."
- Based on a survey conducted by NNSA NA-116 and Los Alamos Site Office, the Laboratory scored 89% in a weighed average DoD survey, which used the total estimated cost for each project compared to the total of the projects. Eight sponsors were selected for the survey. Six responded with the prescribed survey form. All sponsors responding to the survey had good comments about technical quality, cost, schedule and responsiveness of the projects performed by the Laboratory.
- The sponsors of the following projects provided comments for Outstanding performance by the Laboratory:
  - Proposal R-1264, the sponsor commented that LANL delivered high quality products to our war fighter community, and the Laboratory provided modeling and simulation products and technical expertise to support the Joint Training Transformation Initiative including supporting Blue Flag, Joint Expeditionary Force Experiment, and many others.
  - Proposal R-3084 (Joint Munitions Program), the sponsor noted that the Laboratory's technical work was excellent in the form of presentations at TCG and TAC meetings, technical papers for journals and conferences; overall the Laboratory made excellent technical contributions to the Joint Munitions Program.
  - Proposal R-3050, the sponsor noted that the Laboratory provided DARPA and the Stealthy Sensor Projects with excellent technical expertise within the funds provided.
  - Proposal R-2849, the sponsor noted that the Laboratory provided outstanding support, both in US and in Kazakhstan, and outstanding asset to DTRA

Concerns
In order to continue to provide advanced Science and Technology to address the defense community's immediate and long-term needs, the Laboratory is formulating a Strategic Plan to address the following issues:

- Strategically consolidate resources to better service just a few potential DoD customers with selective programs.
- Balance frequent DoD expectations for near-to-intermediate-term deliverables with initiatives to support innovative research.

Measure: 4.6
Maintain and deploy, as required, nuclear emergency response teams for CONUS and OCONUS response to radiological and nuclear threats.

Measure 4.6 was rated as Outstanding for FY2005.

This measure centered on work performed for NNSA/NA-40, the Office of Emergency Response. Their mission is to detect, neutralize, and respond to an unauthorized use of a nuclear device. The Laboratory addressed significant challenges during this term. The most significant of these was the re-constitution of the capability lost by the relocation and closure of TA-18. The Laboratory Emergency Response Office met this challenge well, establishing a training capability at TA-55 under tight resource constraints, making significant progress toward establishing interim capability at TA-55 and the Device Assembly Facility (DAF) at Nevada, and meeting on-going operational requirements.

This measure was rated Outstanding based on quality of work performed and response from DOE/HQ and program sponsors. The Laboratory stand-down seemed to have minimal impact on these programs. NNSA NA-40 was particularly impressed with the Laboratory's efforts during the stand-down.

Significant Accomplishments
- Established some initial capability at TA-55 to replace TA-18 support to NA-42 programs.
- Deployed personnel on 36 drills/exercise and 18 real world events.
- Set up a new ARG Home Team node at Los Alamos to support the new ARG Mission Analysis.
- Completed relocation of ARG equipment to Kirtland Air Force Base in support of the new ARG deployment posture.
- Provided personnel to support all drills, exercises, National Special Security Events (NSSE), Orange Alerts, etc. as requested. Support was not hindered by the LANL stand-down.
- Provided technical training to approximately 350 external customers in 60 training events.
- According to NA-40, LANL far exceeded other contracting organizations in looking for innovative ways to support planning and strategic initiatives.
- Provided excellent overall management of the ER program.
- Personnel were flexible and supporting in the maintenance and calibration of equipment. Particularly with the equipment not located on site at the Laboratory.
- Excellent support provided in support to the ER watch bill in the form of personnel and equipment as well as availability to provide support to Disposition and ARG phase II and III personnel.
- Continued to look for enhanced methods and technical solutions to the enormous task of detection/diagnostics/prevention of a WMD

Concerns

- Establishment of interim research capability at TA-55 did not proceed at a satisfactory rate. This was due to competing resource requirements at the facility.
- Management of the ARG/Disposition program did not live up to the expectations outlined by the NNSA Program Office. The Threat Response Office management is aware of the issues and is taking steps to provide better leadership.

OBJECTIVE 5.0
Enhance and nurture a strong science, engineering, and technology base in support of national security strategic objectives.

Objective 5.0 was rated as Outstanding for FY2005.

This Objective was focused on maintaining a strong scientific and technology portfolio, which supports maintenance of the U.S. technological edge, and supports broad national needs. LANL is one of the few federally funded laboratories with a research outlook in excess of ten years. As such, they carry a significant responsibility for ensuring the United States technological edge in a variety of areas, including national security. This science base is at the core of the NNSA mission and, more broadly, the missions of the Department of Energy.

The Laboratory's performance in this area was of high caliber as noted by sponsors and peer review alike. Nine of the sixteen LANL Division Review Committees rated the Laboratory performance as Outstanding, six as Good/Outstanding, and one as Good. This process represented peer review of the quality of science, broadly viewed as the primary metric in evaluating scientific research and development. Response from DOE HQ and other sponsors reflected significant accomplishment by Laboratory staff in meeting and exceeding technical requirements.

Measure: 5.1
Nurture and maintain the Laboratory science and engineering excellence in disciplines and capabilities needed to support our national security missions and emerging national needs.

Measure 5.1 was rated as Outstanding for FY2005.

This measure centered on fundamental scientific research that has direct or the potential to contribute to national security needs. The primary metric in evaluating fundamental science was peer review. The Laboratory Division Review process provided the necessary peer reviews for science at the Laboratory.

This measure was rated Outstanding based on quality of work performed, as evidenced by peer review, and responses from DOE and NNSA/HQ and program sponsors.

Significant Accomplishments

- The Division Review Committee peer review of the Laboratory resulted in nine out of sixteen evaluated the Laboratory as Outstanding, six as Good/Outstanding, and one as Good.
- Made significant progress in supporting "small scale science" initiatives including: development of a "Science Roadmap" to align support for small-scale science with the FY2004 NNSA Strategic Plan, development and implementation of a business model for science, strategic investment of institutional funds, and increased connectivity for institutional computing.
- A novel method to obtain images of the seismic velocity structure of the uppermost mantle beneath China enabled more accurate location of earthquakes and explosions.
- Development of a new plutonium equation of state incorporating data from subcritical experiments at the Nevada Test Site and small-scale plutonium experiments provided the first all-new equation of state for plutonium in over 20 years.
- Development of a database for fission and prompt and delayed neutrons for actinide reactions.
- Measurements of residual stresses were performed on classified parts at the Lujan Center's SMARTS diffractometer in support of the hydro test program.
- Formation of high strength beryllium-beryllium bonds was a key advance in developing ignition capsules for the National Ignition Facility (NIF). Strong capsules were essential to contain the quantity of deuterium-tritium required to achieve ignition in the inertial confinement fusion experiments.

Measure: 5.2

Develop and implement an integrated and balanced strategy for investing LDRD, programmatic and institutional resources to ensure the long-term vitality of the Laboratory science, engineering, and technology base in support of national security missions and emerging national needs.

Measure 5.2 was rated as Outstanding for FY2005.

The Laboratory Directed Research & Development (LDRD) program continued to function extremely well, providing fundamental science and thought processes to advance the DOE and NNSA mission areas, as well as provide tools for the high caliber of scientific integration characteristic of a world-class laboratory. The program enjoyed superior peer review of its project reviews and proposal selection, yielding an equally superior portfolio of scientific successes.

This measure was rated as Outstanding based on quality of work performed, the contributions to DOE, NNSA, DHS, and numerous other agencies. The transition of oversight of this program from NNSA NA-116 to the Los Alamos Site Office in July 2005 was facilitated by the assistance and continued cooperation of the LDRD program office.

Significant Accomplishments

- LANL provided excellent alignment of the LDRD program's 270 projects with Laboratory strategic goals contributing heavily to the scientific thinking necessary for the continued vitality of the Laboratory and national science capabilities.
- LDRD management responded numerous times in a commendable manner to Congressional inquiries and NNSA data calls, often leading the NNSA Complex in coordinating an overall response.
- Re-engineering the database used to manage the vast amounts of information in this program began to pay off as the new fiscal year proposals were easier to review and were of higher quality.
- Individual project successes were numerous. A few hallmark examples are illustrated here:
  - An effort to use naturally occurring muons for passive imaging will undoubtedly augment the laboratory's capability in weapons radiography, as well as provide advanced foundations in non-proliferation and other aspects of National Security particularly for Homeland Defense.
  - LDRD research on nuclear isomer physics established the foundation for a Laboratory team to win a NNSA/DP Award of Excellence.
  - RAPTOR-S was the first optical telescope ever to begin observations before a gamma ray burst reached its peak brightness, thus enabling detection of visible light generated by the same process that drives gamma ray bursts. These results indicate that there is unique visible light that varies in concert with the gamma rays emitted, yielding insights into the origin of gamma ray bursts.
  - Studies on the exposure of magnesium sulfate salts to various temperatures, pressure, and humidity conditions in order to understand their possible hydration states under Martian surface conditions demonstrated that Martian samples have to be analyzed *in situ* because these minerals are very sensitive to H_2O.
  - A single turn experiment at the National High Magnetic Field Laboratory reached 100 tesla in a system designed to study the electronic energy surface (Fermi surface) of plutonium. The system is designed to safely test actinide samples, such as plutonium, at low temperatures (1.5 K) where the effects of thermal noise can be reduced.
  - The discovery that electron spins in semiconductor crystals of gallium arsenide can be intentionally tipped, rotated, and flipped by simply squeezing the crystal in a controlled manner, suggests alternative methods of spin manipulations of semiconductor spintronic devices.

Measure: 5.3

Execute non-NNSA sponsored research and development that builds on unique Laboratory expertise and capabilities and enhances the ability to meet current and future national security needs.

Measure 5.3 was rated as Good for FY2005.

This measure centered on fundamental scientific research funded by non-NNSA sponsors that had direct or potential to contribute to national needs. The primary metric in evaluating fundamental science was peer review. The LANL Laboratory Division Review process provided necessary peer review for science at the Laboratory.

This measure was rated Good based on quality of work performed, as evidenced by peer review, and response from HQ and program sponsors. The quality of scientific achievement was of very high caliber; unfortunately support to Pu-238 operations was insufficient.

Significant Accomplishments

- Major contributor to the Joint Genome Institute, a role that greatly improved over a number of years and one that they now carry out with solid scientific and technical contributions.
- One of the leading experimental groups in developing optical imaging techniques to visualize nerve conduction, one of the focus areas in the testing of artificial retina prototypes.
- A Stand-off Fluid Characterization Method was developed for use with the Swept Frequency Acoustic Interferometry technique to identify and characterize fluids inside sealed containers in a non-invasive manner.
- In the C-Mod collaboration, there were some technical issues early in the year, but LANL's Visible/Infrared camera worked well on C-Mod by the end of FY2005.
- The DOE Office of Science commented that LANL did an excellent job in supporting the International Thermonuclear Experimental Reactor (ITER) project office in defining the technical aspects and developing cost estimates for possible contributions in the ITER tritium plant.
- In magnetized target fusion, succeeded in a compact field reversed configuration (FRC) reliably and reproducibly, suitable for compressional heating study. The Laboratory created a FRC with a density of 4×10^{16} per cc and a temperature of about 4 million degrees Kelvin. These are the highest densities and temperatures that have been created in a FRC with a diameter less than 10 cm.
- Effectively coordinated its research activities with other PHENIX collaborators to produce in record-time preliminary results for announcements in plenary and poster sessions at the 2005 Quark Matter conference held in Hungary.
- Continues to demonstrate leadership in PHENIX by playing a major role in the design for a silicon vertex upgrade of the PHENIX detector.
- Significant role in the operation and data acquisition, analysis and interpretation of the Sudbury Neutrino Observatory (SNO) experiment that is being conducted by an international collaboration. Laboratory scientists strongly supported the installation of the neutral current detectors in the experiment, and the commissioning of this third phase of the SNO experiment.
- Participation in the MiniBooNE experiment was key to that effort's success in acquiring their statistical goal on schedule. The Laboratory continued to play a major role in the analysis of the data in order to provide a result on the possible existence of a sterile neutrino by the end of CY 2005.
- Provided on time Sr-82 deliveries with good quality product during FY 2005.
- Staff working on the HIV Database and Analysis Unit did an outstanding job. The Laboratory is a resource to the world for HIV analysis based on its publication record.
- A new model predicts the number of cells infected with multiple HIV particles, providing insights into how the virus is able to evolve so rapidly.

- LANL achieved optical refrigeration to record low temperatures that is an important step in the goal of achieving inexpensive, powerful, and reliable methods for cryogenic refrigeration.
- NASA indicates that LANL "Support for the SWIFT mission continues to be outstanding". The flight software that the Laboratory team wrote and maintains for the SWIFT project was at the heart of the mission performance, state of the art and worked exceptionally well on orbit.

Concerns

- Elements of the Office of Science expressed concern regarding communication and planning as it related to the turnover of key researchers.
- Responsibility for the one-year delay in completing the cold and ultra-cold neutron experiment fabrication projects in a timely fashion appeared to rest with Laboratory institutional elements, and a portion with the research groups involved.
- The Sum of the Fractions problem for P-32 and P-33 for the Isotope Production Facility (IPF) and hot cell complex was not recognized until days before start up of IPF. This problem continued to linger and is causing additional work, expense and additional transport of radioactivity over the road. LANL was slow to send an exemption document to NNSA. Analysis of the P-32, P-33 content of the irradiated RbCl targets was not completed in FY2005 as planned.
- Significant delays in the re-start of Pu-238 operations at TA-55 were evident that institutional issues are responsible for the delays. This has negatively impacted several Federal initiatives.
- The sponsors of The *Integrated Chemical Effects Testing for Pressurized Water Reactors Emergency Core Cooling Systems* project gave LANL very low scores, from mid-marginal for technical quality to less than unsatisfactory for cost, schedule, responsiveness, and overall performance.

Measure: 5.4
Foster active participation in the broad scientific and technical community, leveraging unique Laboratory expertise and capabilities; develop strategic collaborations with other national laboratories, industry and academia.

Measure 5.4 was rated as Outstanding for FY2005.

This measure focused on the Laboratory's participation in the broad scientific community. Such participation was dominantly indicated by the following criteria: number of publications in peer reviewed journals, trends in publication record, number of collaborations with academia and industry, and participation in national and international groups R&D awards. Furthermore, in working in those programs, scientists and engineers enhanced their core competence and skill base related to the Stockpile Stewardship program.

This measure was rated Outstanding based on quality of work performed and response from DOE and NNSA HQ and program sponsors.

Significant Accomplishments

- Collaborated with the broad research and technical community, including universities, national laboratories, other federal agencies, and private industry to assure its research and technical capability was fully utilized to support the Laboratory's national security mission.
- Performed outstanding research activities in FY05, which produced extensive publications. The Laboratory was ranked 10th in the world and the highest among the national laboratories in Physics citations.
- Strong collaborations with universities in diversified program where unique Laboratory and University expertise were brought together to achieve better science. Under the program, the following were accomplished
  - Established the Western Universities Consortium with several universities in the region to enhance research interactions

  - Funded 23 cooperative projects with New Mexico Universities
  - Established the New Mexico Center for Isotopes in Medicine
  - Conducted specific studies with different universities, such as earth's tectonic plates and the distribution of stresses in the earth's crust
  - Developed theory for studying processes on power-law small-world networks
  - Aided in development of the Integrated Center for Structure and Function Innovation, (the NIH-funded Center for HIV/AIDS Vaccine Immunology Project)
  - Examined a pure-shear rifting mechanism for rift extension in the Rio Grande Rift of New Mexico
  - Researched methods for DNA repair
  - Participated in the neutron experimental program
- Engaged many researches at the national and international capacities leading to many recognitions, such as: validation of a computer model that predicts the rebirth and stellar burning and mixing processes of evolved stars; the Center for Integrated Nanotechnologies (CINT); first fiber optic calorimeter; assessment of the initial mass of a large bolide over Antarctica, the National; Center for Atmospheric Research (NCAR) in energy infrastructure security, remote sensing, space weather, climate sciences, and computational sciences.
- Hosted workshops with scientific significance, such as Community Finite Element Models (CFEM) for Fault Systems and Tectonic Studies and Correlated Electron Effects for Anomalous Properties of Elemental Actinides, and served on committees such as NASA strategic and advisory panels and US Nuclear Data Program with its international collaboration boards and advisory committees.
- Earned many significant awards for the scientific accomplishments in individuals and groups. Scientists from the Laboratory earned individual recognition, such as Fellows of the American Physical Society; American Association for the Advancement of Science (AAAS) Fellows; Seaborg Medal; Fellow of the Acoustical Society of America; and Asian American Engineer of the Year. The Laboratory also received the following group awards: the European Union's Descartes Prize for Research; Four R&D 100 awards; Raymond and Beverly Sackler Prize in the Physical Sciences; Bridgman Award, International Association for the Advancement of High Pressure Physics & Technology; J. B. Wagner Young Investigator Award, Electrochemical Society; Peter Haas Award, Institute of Electrical and Electronic Engineers, and *Nanotech Brief's* Nano 50 Awards.
- Successful in meeting intellectual property protection and licensing goals, interactions with external partners, identifying strategic and new partnership and other options for transfer of lab-development technologies. For FY2005 the Technology Development Division identified six high level goals for the division and reports quarterly on progress.

OBJECTIVE 6.0
Optimize current and evolving mission performance by providing effective and efficient facilities and infrastructure.

Objective 6 was rated as Good for FY2005.

Although three of the four measures supporting this Objective achieved an Outstanding rating with the fourth at Good, NNSA assessed the overall performance as Good, recognizing issues with maintenance, including contractor efficiency; Nuclear Material Safeguards and Security Upgrades Project (NMSSUP) Phase II; and the Waste Management Risk Mitigation project.

The Laboratory developed a strategy, as outlined in the Ten-Year Comprehensive Site Plan (TYCSP) for FY2006-FY2015, which should result in a sustainable and more responsive infrastructure within a reduced footprint that can fully support NNSA and Laboratory nuclear weapons program objectives.

While the Laboratory was on track to meet deferred maintenance goals, the strategy plan defined in the TYCSP was the key for the Laboratory actually achieving true improvement in facility maintenance, one area within Objective 6 where performance was not outstanding.

In addition to these longer-term efforts, the Laboratory was in the process of implementing an Earned Value Management System (EVMS) and common Work Breakdown Structure (WBS) for facility management. These were considered also necessary first steps for improving the Laboratory's maintenance practices.

Measure: 6.1
***Refine and execute, in coordination with NNSA and other appropriate DOE programs, plans to support optimal use by both laboratories of scientific, research, and test facilities.**

Measure 6.1 was rated as Outstanding for FY2005.

The NNSA considered both planning and operation of user facilities in the development of their evaluation of the Laboratory's performance for this measure. Overall, the Laboratory developed and implemented, with NNSA and other appropriate DOE programs, plans to support optimal use of scientific, research, and test facilities and capabilities. LANSCE provided beam line for greater than 90% of the experiments that were approved and met beam delivery for 100% of all essential proton radiography experiments. The Hydrodynamic Test Program successfully restructured the Laboratory's FY2005 plan to support the Navy Strategic Systems W76-1 Life Extension Program and executed the plan in its entirety. The Atlas pulse power system was utilized successfully to obtain properties of high precision materials and complex hydrodynamic data for validating codes and models and the Laboratory provided full use of NNSA's simulation facilities for weapons code development. The simulation codes were utilized extensively for the Crestone and Shavano Projects under the Advanced Simulation and Computing (ASC) Program.

The Laboratory supported optimal use of their facilities while completing an integrated schedule for operations at both the Laboratory and the DAF.

Significant Accomplishments
- Analysis of SNL Red Storm platform for ASC simulations predicts 10-20x performance improvement over previous SNL platform ("ASCI Red").
- The initial version of the FY2006-FY2010 National Hydrotest Plan was drafted at Los Alamos and Livermore.

- LANSCE achieved 75% beam availability, thus achieving an outstanding rating for beam delivery for Basic Energy Sciences (BES) programs. Beam delivery for proton radiography experiments is currently at 100%.
- LANSCE-R ESAAB was held and CD-0 was submitted to DOE for action.
- Completed relocation of Atlas at NTS and successfully completed the first two physics experiments.
- SCC computer availability >98% (>70% required for Outstanding).
- Established Integrated Schedule for DAF.

Measure: 6.2

Execute construction projects as identified and agreed between NNSA and the laboratories within scope, schedule, and budget.

Measure 6.2 was rated as Satisfactory for FY2005.

This measure focused on planning, baseline development, execution, and management of construction project activities with a total project cost greater than $500K. The measure also addressed the execution of Facilities and Infrastructure Recapitalization Program (FIRP) projects, which included decontamination and decommissioning (D&D) and small/intermediate deferred maintenance (DM) projects, as well as Institutional General Plant Projects (IGPP). All other construction projects including General Plant Projects (GPP), Congressional Line Item Projects (LI), and expense-funded projects were evaluated individually. NNSA's evaluation considered all projects within each category and considered the Laboratory's FY2005 self-assessment. NNSA felt that this in-depth review (project-by-project basis) gave a more accurate evaluation of the overall health of the construction management program at the Laboratory, and allowed NNSA to determine if broad (institutional) issues were affecting project performance. Each project category had a specific number of items reviewed, graded and summarized using the adjectival ratings for Appendix F for FY2005. The Laboratory's Implementation Guidelines and Evaluation Factors, developed jointly with the Laboratory's Principal Associate Director Nuclear Weapons Program (PADNWP), Project Management Division (PMD) and NNSA, formed the basis of review. FIRP costing and planning goals were included and assessed in measure 6.3.

Construction project management was evaluated against three major evaluation factors:
1. Planning projects in accordance with DOE/NNSA planning protocol.
2. Executing projects consistent with plan/baselines.
3. Tracking performance against the plan/baselines, reporting performance, and taking appropriate corrective actions when necessary.

Construction project planning was assessed as being in the Good range. Baseline planning and development activities were sufficient to support effective project execution. Proposed and planned projects were consistent with those presented in the Ten Year Comprehensive Site Plan (TYCSP) FY2005 version and the mid-year update. Project scope was defined and approved at the necessary levels. Lessons learned continue to be documented and shared, both with GPP projects and for major Line Item Projects. DOE Order 413.3 has been fully implemented into Laboratory Project Management Division documents and associated individual project plans. Overall, FY2005 was a satisfactory year for the Laboratory's major line item projects.

In the area of project execution, line-item projects made adequate progress towards meeting their critical decision points. As an example, the Chemistry and Metallurgy Facility Replacement (CMRR) project completed preparations and briefed the Energy System Acquisition Advisory Board (ESAAB) for their Phase A – Radiological Laboratory Utility Office Building (RLUOB) CD-2/3 request. Projects were managed in accordance with their approved baselines and under an Earned Value Management System (EVMS).

Last year, unacceptably slow progress in execution of FIRP resulted in a rating of Unsatisfactory. Several causes for the delays in the FIRP execution were associated with the procurement/ acquisition process, and general project management issues such as inadequate resources, poor communication, and safety integration. Some improvements began late in FY2004, but it was recognized that continued improvements were necessary. Improvements were realized in the FY2005 rating period. A stronger FIRP project management team was established and improvements in FIRP project execution and costing resulted. These project management improvements also drove improvements in the procurement and acquisition processes that support FIRP as well. However, continued improvements, specifically in the areas of partnering with NNSA on federalized Disposition procurements and planning efforts will be required in FY2006.

In the area of project reporting, the Laboratory continued their monthly reporting and review process throughout FY2005. Additionally, DOE/NNSA conducted a review of the Laboratory's EVMS in FY2005. The review consisted of an audit of the current EVMS system for the purpose of certification in accordance with ANSI standard 748. The certification review was conducted through the Department's Office of Engineering and Construction Management (OECM) and by the Defense Contracts Management Agency (DCMA). No corrective actions resulted from the review on the construction projects assessed. The certification of the Laboratory's EVMS system is still pending final approval from DOE OECM.

Significant Accomplishments

- The CMRR project received CD-1 approval in the 3Qtr of FY2005. The project is currently waiting approval of the CD2/3-a (RLUOB) presented in September 2005.
- The Nuclear Materials Safeguards and Security Upgrade Project, Phase One (NMSSUP – Phase I) was completed 21 weeks ahead of schedule and $4.3M under budget and received Critical Decision 4 (CD-4).
- The National Security Sciences Building (NSSB) line item construction project continued its solid baseline performance in FY2005. The project was expected to complete ahead of schedule.
- The TA-55 Reinvestment line item construction project received CD-0 in the 2Qtr of FY2005. The project was actively working conceptual design activities for two of the project's sub-elements.
- Critical Decision 0 (CD-0) approvals were received for the Radioactive Liquid Waste Treatment Facility Project and the TA-55 Radiography Project.
- Critical Decision 1 (CD-1) approval was achieved for the TA-18 CEF Project.
- Critical Decision 2/3 (CD-2/3) approval was achieved for the Power Grid Infrastructure upgrade project.
- Critical Decision 1, 2a and 3a (CD-2a/3a) approval was achieved on the DARHT-II project.
- Critical Decision 2/3 (CD-2/3) approval was achieved on the Security Perimeter Project.
- For the 66 construction contracts awarded and managed by the Laboratory, the composite Cost Performance Index (CPI) was 1.09 and the Schedule Performance Index (SPI) was 0.88. Much of that schedule variance was attributable to the Laboratory's work suspension that started in July 2004

Concerns

- At the end of the rating period, a path forward was still being developed on the NMSSUP Phase II project after being issued a stop work order on conceptual design in August 2005. The incorporation of the Design Basis Threat (DBT) guidance impacted the scope definition of the conceptual design report supporting Critical Decision 1 schedule. The project was working with NNSA NA-70 and NA-50 to resolve all issues and document a "go-forward" plan. The project was working a restart plan to address the revised scope and programmatic needs in order to execute within the funding limitations set by NNSA.
- Corrective actions were taken and management was involved on a select, small number of projects that were individually performing at only a satisfactory level. The corrective actions were

necessary to ensure these projects received the focused attention required to improve their overall performance indicators.

- Through significant efforts of the project management team, a corrective path forward was identified and initiated for the Waste Management Risk Mitigation Line Item Construction project that struggled in FY2005 with both contractor and Authorization Basis issues. The associated schedule delay will result in approximately $4.5M in additional cost to complete the project.

Measure: 6.3
Improve and sustain the physical infrastructure needed to support Laboratory operations. • **Execute the Facilities and Infrastructure Recapitalization Program.** • **Manage facilities in a manner consistent with NNSA's deferred maintenance goals and other objectives as stated in the approved Ten-Year Comprehensive Site Plan.** • **Sustain planned availability of mission essential facilities.** • **Implement the FY05 NNSA-approved Maintenance Implementation Plan (MIP).**

Measure 6.3 was rated as Good for FY2005.

Execute the Facilities and Infrastructure Recapitalization Program (FIRP)

In addition to the cost and schedule performance metrics that are covered in 6.2, the basis for the rating of the Facility and Infrastructure Recapitalization Program looked at two primary metrics: the amount costed versus total funding; and, the planning of FY2006 projects completed against the expected FY2006 budget. The FIRP was evaluated against the following factors:

- For FY2005 FIRP funded projects, including those continuing from FY2004, one aspect of the evaluation for this measure was a comparison of the funding amount against the amount costed (as of September 30, 2005) on projects that were formally authorized and funded by NNSA within the first three quarters of FY2005. The Laboratory projected to cost 62% of the funding associated with projects ($80M) that were under Laboratory execution control. Actual costs at fiscal year end were $60.1M. This equates to a cost to budget ratio of 75%. The 75% costing was within the lower bound established for an outstanding rating. Note, the $80M funding does not include the funding of projects ($16M) that NNSA "federalized" by directly contracting those projects to small businesses.
- For FY2005 FIRP funded planning projects, one aspect of the evaluation for this measure was a comparison of the Total Project Cost (TPC) for the projects planned versus the expected funding in FY2006. The TPC for projects that were planned in FY2005 was $52.2M in Recapitalization and Disposition. The expected FY2006 budget in these areas is $33.0M. The percentage that has been planned was 158%. 120% was the lower boundary for an outstanding rating for this metric.
- The overall evaluation of this sub-measure was based on a composite score of the above metrics with a 60/40 percentage weighting between FIRP costing and planning, respectively. The composite score achieved was: 0.6*75% + 0.4*158% = 108%. (85% was the lower boundary for achieving an outstanding rating for this sub-measure).
- Although not a metric measured for Appendix F, the Laboratory continued to be the leader in the complex for the amount of deferred maintenance reduced through FIRP recapitalization projects. This provided for a return on investment of 98% of the total FIRP funding for recapitalization projects. The performance in FIRP execution improved significantly over last year's Unsatisfactory rating. This is primarily due to the increased emphasis and oversight in the areas of procurement, planning and project team dedication.

Manage facilities in a manner consistent with NNSA's deferred maintenance goals and other objectives as stated in the approved Ten-Year Comprehensive Site Plan (TYCSP); Development of LANL Institutional Maintenance Program Plan; and Implement the FY2005 LANL Maintenance Implementation Plan (MIP).

A critical component of the Laboratory's facility management was providing adequate funding for required maintenance and reducing the overall deferred maintenance backlog. NNSA provided guidance on what was considered an adequate range for funding maintenance activities and laid out specific goals with respect to deferred maintenance; with the Facility Condition Index (FCI) being defined as the ratio of deferred maintenance (DM) against replacement plant value (RPV). Specific emphasis was placed on mission-essential (ME) facilities (whose primary source of maintenance funding is through the RTBF program) and deferred maintenance reduction (whose primary source of funding was through the FIRP).

Some progress was noted in the areas of maintenance funding for mission essential facilities and the reduction of deferred maintenance. In FY2005, the Laboratory funded enduring mission essential facilities maintenance at 2.3% (excluding the CMR facility) of RPV, which was within the DOE recommended guidelines of 2-4% of RPV. In deferred maintenance, the Laboratory met the NNSA goal for stabilizing the deferred maintenance backlog by the end of FY2005. This stabilization was demonstrated by a continued overall decrease in the site's overall deferred maintenance backlog ($547M in FY2004 to $476M in FY2005).

The evaluation basis for this sub-measure was based on the development and implementation of formal maintenance management plans and procedures. The primary concern that needs to be addressed is the establishment of a robust and well-managed maintenance program for the infrastructure at LANL. Evaluation basis elements were created to assess key underlying items that illustrated that LANL was committed to establishing a maintenance program that was adequately funded, properly managed, and effective at maintaining the infrastructure of the Laboratory.

- Development of a Maintenance Program Plan (MPP) by the 3Qtr. FY2005. The MPP was submitted during the 3Qtr. with issues as noted below.
- The Maintenance Implementation Plan was revised and submitted as part of the MPP submittal in the 3Qtr of FY2005 with issues as noted below.
- Complete an assessment to validate implementation of the nine required maintenance procedures developed by Facilities Management Division (FMD) by the 4Qtr FY2005. The maintenance procedure assessment was completed by the end of the 4Qtr FY2005 with notable issues as noted below.

Significant Accomplishments

- Within the FIRP, costing for FY2005 was significantly higher than in any previous year.
- The Power Grid Infrastructure Upgrades Project within the FIRP received CD-2/3 for the transmission line and STA substation design-build. The ETA maintenance portion of this project received CD-2.
- The deferred maintenance reduction was accomplished at a rate of $0.99 per FIRP recapitalization dollar. According to NNSA NA-52, the FIRP sponsor, in FY2005, the Laboratory bought down the greatest amount of deferred maintenance within the complex.
- The deferred maintenance backlog was stabilized and is decreasing at the site, which met the NNSA FY2005 deferred maintenance goal.
- Maintenance planning guidance was implemented and facility-funding requests have been issued for FY2006 RTBF budget.

Concerns

- The Laboratory's maintenance program continues to face the following challenges:
  - Developing detailed funding requirements under the RTBF program and FIRP that enable annual allocations to maintenance activities reflective of a well-managed program. Once the program is well established and managed accordingly, funding allocations will be more defensible.
  - Continuity and efficiency issues within Laboratory maintenance organizations. NNSA expects: implementation of the maintenance procedures in a consistent manner, as well as utilization of a revised WBS for RTBF and indirectly funded facilities will bring a better understanding and consistency to the Laboratory's overall maintenance program and,
  - Need for improved processes and procedures supporting the maintenance program at the Laboratory.
  - Laboratory management responsible for the maintenance program needs to work more closely with NNSA to define expectations for the establishment of the Maintenance Program. This will enable NNSA to endorse both the MPP and MIP in a timely manner.

Sustain planned availability of mission essential facilities.

The RTBF mission-essential facilities support the programmatic activities of the Stockpile Stewardship Program at LANL. Facility status for FY2005 was greater than 95% of planned operating time and no Level 1 milestones were missed as a result of facility downtime. LANL also updated its Nuclear Facilities Consolidation Program Plan and the FY2005 Integrated Nuclear Planning (INP) documents. Both were incorporated into the FY2006 Ten Year Comprehensive Site Plan (TYCSP). The Laboratory additionally increased its INP core staff and added project controls functions.

This portion of the measure is rated Good based on quality of work performed. The Laboratory stand down seemed to have minimal impact upon its performance for this measure. The Laboratory must work to ensure greater continuity amongst its planning documents. The Laboratory developed a draft Nuclear Facilities Consolidation plan that should provide strategic linkage between planned construction projects and enduring mission requirements.

Significant Accomplishments

- Facility availability above 95% of planned operating time.
- Issued annual status update on Nuclear Facilities Consolidation and the FY2005 Integrated Nuclear Planning Program Plan.

Concerns

- Continued INP focus on strategic consolidation efforts is required to successfully integrate the critical activities that must occur in the TA-55/50 area over the next 10 years.
- The TYCSP draft issued to the NNSA Site Office in August of 2005 did not satisfy criteria for an "Outstanding." Significant LASO/LANL interaction was required to improve the document before transmittal to NNSA/HQ in September of 2005. The Laboratory must ensure greater continuity amongst its planning documents and ensure time to interact with the Site Office counterparts to meet schedule.

Measure: 6.4
Support planning, implementation, and execution of SNM consolidation and/or relocation activities, including reducing inventories of surplus and excess SNM consistent with DOE/NNSA approved plans.

Measure 6.4 was rated as Outstanding for FY2005.

The evaluation of performance for Measure 6.4 was based on the planning, implementation, and execution of special nuclear materials (SNM) processing, consolidation, and relocation. In FY2005, the SNM activities focused primarily on materials that were residing at TA-18. Six of the nineteen milestones associated with this measure were in support of efforts to relocate and process materials to other areas from TA-18. In addition to TA-18 Early Move activities, six of the milestones were components of the Laboratory Materials Stabilization Project. The focus of the stabilization project was the minimization of the health risks to workers and the public by the stabilization of nuclear materials safely and effectively per requirements from the Defense Nuclear Facility Safety Board (DNFSB). The nineteen performance indicators were consistent with NNSA-wide disposition activities to develop and implement a long-term plan and schedule to reduce inventories of surplus and excess SNM.

This measure was rated Outstanding based on quality of work performed and response from NNSA/HQ and program sponsors. The Laboratory exceeded expectations with regard to material processing and support for the TA-18 relocation effort.

Significant Accomplishments

- Doubled SHEBA processing capacity within the CMR Facility to complete the processing of the SHEBA solutions one month ahead of schedule.
- Completed seven additional shipments of surplus metal and oxide from TA-55 and TA-18 to Y-12 and the Nevada Test Site in support of the de-inventory of TA-18.
- Disassembly and preparation of Godiva for off-site shipment.
- Continued to meet programmatic milestones at TA-55 and TA-18 while supporting the de-inventory of TA-18.
- Finalized the Risk Methodology/Prioritization document for Nuclear Material Packaging entitled: Risk Ranking of LANL Nuclear Material Storage Containers for Repackaging Prioritization (LA-UR-05-3864). This document was the basis for the prioritization of repacking/stabilization activities.
- Compressed the multi-year schedule for TA-18 HEU SHEBA solution, uranium metal, and uranium oxide processing into a single year.
- LANL/NMT division completed the installation of a 3013 outer can welder in PF-4.
- LANL/N division completed one shipment of surplus HEU from TA-18 to Y-12.
- Evaluation of MASS Replacement accomplished.

Concerns

- Both the TA-18 Early Move project and the operational issues at TA-50 hampered LANL's ability to stabilize existing inventories of special inventories of special nuclear materials. An operational radiological waste treatment facility is a critical requirement to maintaining momentum on nuclear material stabilization.

Operations: Objectives 7.0 – 10.0

OBJECTIVE 7.0
Utilize UC strengths to recruit, retain, and develop the workforce.

Objective 7.0 was rated as Outstanding for FY2005.

The Laboratory's Human Resources organization's initiatives undertaken during the fiscal year significantly exceeded the operational performance expectations that included some challenging tasks and deliverables.

A period of significant change is underway at the Laboratory making recruitment and retention more challenging than perhaps at any other time in the Laboratory's history. Employees experienced much uncertainty as the contract for management and operation of the Laboratory was competed for the first time in over 50 years. The Laboratory endured losses of employees among most categories. The overall attrition rate for LANL for FY2005 was 9.7% of which 6.0% were retirements and 3.7% were other (non-retirement) terminations. This compares to a 6.3% attrition rate in 2004 (3.1% retirements and 3.2% other terminations).

Despite the challenges, the Laboratory staff continued to make improvements in the human resources system and human resource programs were well managed. LANL identified Recruitment and Retention as a significant goal for FY2005 and a cross-discipline team was formed to identify problems and develop solutions. The Laboratory conducted institution-wide workforce reviews in part to form the basis for staffing and recruitment activities. LANL Human Resources (HR) developed 23 initiatives and created project plans for them. Seven of the 23 were directly linked to HR performance metrics regarding recruitment/retention and nine were linked to HR systems improvement. Significant changes included automated personnel actions and streamlined requests for badges and for managing on-site visitors.

Significant Achievements

- Conducted institution-wide workforce reviews in part to form the basis for staffing and recruitment activities. HR developed 23 initiatives and created project plans for them. Seven of the 23 were directly linked to Appendix F Objective 7 and nine were linked to Objective 9.
- In August 2005, the Enterprise Project began operation of the Oracle Human Resources Management System. Significant changes include automated personnel actions and streamlined requests for badges and for managing on-site visitors. The new system is expected to save 30,000 pieces of paper per year.

Concerns

- Laboratory's Human Resources organization should take efforts to identify the targets for a "skilled and diverse workforce" and for "long-rage core and critical skills requirements" as stated in the Performance Measure and evaluate its status against those targets.

Measure: 7.1

Recruit and retain a skilled and diverse workforce that meets the Laboratories' long-range core and critical skills requirements by implementing a human resource strategy that leverages student programs and UC relationships.

Performance rating for this measure is Outstanding in FY 2005.

The Laboratory's Human Resources organization initiatives during the fiscal year demonstrated exceptional performance to meet expectations and deliverables.

The following are some of the initiatives LANL undertook during FY 2005:

- Tri-Lab cooperation between the Laboratory, Sandia National Laboratory and Lawrence Livermore National Laboratory in which Compensation Increase Plan common methodology was developed.
- Open enrollment for healthcare was conducted with plan costs increasing over 5% while national trends were 10-15%.
- 493 retirements were successfully processed which was twice the number processed in FY2004. Preparations included individual counseling for potential retirees arranged by the Laboratory and supported by a visit from ten benefits representatives from the University of California.
- A study on the cost of replacing people was conducted and supported deployed staff for recruiting. Metrics were developed and put into place to demonstrate impact of the recruiters.
- The effectiveness of retention incentives for nuclear facility workers was assessed and continuation of the retention for another year was justified to NNSA.
- Developed a new process for determining and supporting pay levels proposed for highly compensated individuals who must be approved by UC and NNSA.

Measure: 7.2

Implement leadership and management development programs that achieve workforce and diversity objectives.

Performance rating for this measure is Outstanding in FY 2005.

The Laboratory's Human Resources organization initiatives during the fiscal year demonstrated exceptional performance to meet expectations and deliverables.

Significant Accomplishments

- Instituted a management development program with several components including the Leadership Institute, the Management Institute, the Group Manager Development Training Plan and the Directors Development Program.
- Leadership and management development were addressed in workforce reviews conducted in FY2005.
- Minority and women employees comprised 64% of participants in the Directors Development program.
- Among individuals who graduated from a leadership development program in the past three years, 41% were promoted in the two years following graduation.

Concerns

- The Human Resources organization should take efforts to identify the targets for a "skilled and diverse workforce" and for "long-rage core and critical skills requirements" as stated in the Performance Measure and evaluate its status against those targets.

Measure: 7.3

Establish and implement a weapons point of contact development program.

Measure 7.3 was rated as Outstanding for FY2005.

This measure drives LANL towards selection and assignment of personnel to warhead management positions that were essential to ensure that programmatic information, issues, and decisions are properly managed within the Laboratory and coordinated with applicable organizations in the nuclear weapons complex. This process was accomplished through the formal and competitive hiring process.

Significant Accomplishments

- Issued Information Engineering Releases (IERs) to formally identify weapons points of contact to Pantex on January 30, 2005, March 30, 2005, June 28, 2005, and September 30, 2005.
- Brought together entire infrastructure (HR, mission organizations, training, etc.) to formalize the recruitment, staffing, development, mentoring and succession planning for this program.
- Completed the selection of permanent warhead managers for all four positions.
- Issued the warhead manager qualification policy statement and qualification card.

OBJECTIVE 8.0
Maintain safe, secure, environmentally sound, effective, and efficient operations in support of mission objectives.

Objective 8.0 was rated as Satisfactory for FY2005.

The Laboratory consistently achieved Satisfactory or Good ratings at the measure level under Objective 8.0, an improvement over recent past performance where performance under objective 8.0 was less than Satisfactory and mission performance was impacted.

The Laboratory continued to make some strides in achieving continuous improvement in Integrated Safety Management (ISM) System performance although areas for improvement are noted. NNSA is most concerned about effective application of ISM principles across Laboratory organizations and facilities noting that 1/3 of the safety programs evaluated were Unsatisfactory. Work Control, Conduct of Operations and Readiness Reviews were critical programs that although improved, continue to require management attention to be consistently implemented at LANL. The Laboratory made good progress in implementing a Work Smart Standard for the safety basis of non-nuclear facilities, walking down 600 facilities and identifying 90 facilities requiring re-categorization. The Laboratory continued to make progress ensuring effective implementation of an ES&H corrective action management program. NNSA is hopeful that LANL will continue to improve in this area and expand many of the capabilities that currently reside in the institutional areas of the corrective action management program to the lower tier organizations and facilities. The University of California's Cost Performance Index and Schedule Performance Index was considered to be Unsatisfactory for the legacy clean-up projects at the Laboratory.

LANL achieved a rating of Satisfactory for 10 CFR 830A activities. They were rated Unsatisfactory for 10 CFR 830B activities. Consistent implementation of quality requirements overall within the Laboratory is in the early stages within many organizations. While the specific performance criteria has generally been met, with some elements being delivered ahead of schedule, additional efforts are required to result in a fully implemented institutional quality program. The Laboratory is commended for the proactive manner they employed during FY2005 to accomplish the initiatives achieved.

Of concern is LANL's lack of progress at satisfactorily implementing 10 CFR 830B requirements. The Laboratory committed a minimum of 57 Technical Safety Requirements (TSR) violations at its operating nuclear facilities. A majority of the TSR violations were attributable to adequately implementing safety controls because, once approved, they were never formally verified as working. Safety controls not working at LANL is an endemic problem. Another issue involved the establishment of a Laboratory Unreviewed Safety Question Determination (USQD) sustainable review process based on known weaknesses within the USQD process. A functioning USQ process is the cornerstone to maintaining adequate Safety Bases and facility SSC configuration management. NNSA continues to consider the quality of the UC's first-time safety basis document submittals to be a significant issue and is directly linked to the Laboratory's ability to perform vital NNSA program objectives. NNSA saw little or no improvement over the FY2004 evaluation regarding this issue. The Laboratory is commended for its progress on the Safety Basis Academy, which NNSA believes is needed to improve the quality of safety analysis documentation throughout the Laboratory and the NNSA complex.

The Laboratory's environmental performance improved over that of FY2004. The Environmental Management System (EMS) was implemented at LANL's Division level. The Secretarial 10-year goals on Pollution Prevention were met, with the exception of Transuranic (TRU) waste. Regulatory compliance was Good. The Consent Order brought some closure to Environmental Restoration, as did the Federal Facility Compliance Agreement (FFCA) on Stormwater Management. The Environmental Management Baseline showed significant improvement in its development and an increased degree of formality (O413.3). Communication between NNSA and LANL improved, thus reducing

misunderstandings over objectives, methods, and performance metrics. A number of issues must be resolved, such as inadequate safety basis and nuclear safety implementation. Zero risk in the operation of environmental facilities is inappropriate management and extremely expensive to implement. However, complete neglect of good facility management practices at the Radioactive Liquid Waste Treatment Facility (RLWTF) cannot be allowed to continue, potentially jeopardizing the NNSA mission.

The Laboratory's Safeguards and Security (S&S) Program showed significant levels of improvement in FY2005, achieving Good levels of performance overall while some high priority areas achieved Outstanding levels of performance. In NNSA's FY2005 Annual Survey Report, the Laboratory's overall S&S Program was rated Satisfactory (highest possible rating). The Survey noted numerous strengths that assured the protection of all DOE/NNSA assets at LANL. These strengths included ownership and implementation of security requirements by senior line management; the adoption and implementation of the Deployed Security Model; many formal communication forums; and many highly qualified subject matter experts. These strengths were evidenced by the successful execution of the DX hydrodynamic experiments, stand up of 19 institutional Accountable Classified Removable Electronic Media (ACREM) libraries and corresponding operations, support for the TA-18 Early Move project, the outstanding Protective Force operations, and the use of an Earned Value Management system related to budget planning and execution.

Measure: 8.1
Achieve continuous improvement in ISM System performance: • **Assure consistent and effective application of ISM principles across all organization levels and across all Laboratory facilities.** • **Implement a Work Smart Standard for the safety basis of non-nuclear facilities.** • **Ensure effective implementation of an ES&H corrective action management program, including institutional corrective actions derived from violations enforceable under Price Anderson Amendments Act.**

Measure 8.1 was rated as Satisfactory for FY2005.

Assure consistent and effective application of ISM principles across all organization levels and across all Laboratory facilities.

Of the 26 safety programs that NNSA evaluated, almost 1/3 (8 out of 26) were Unsatisfactory. NNSA viewed this data as an overall failure of effective application of ISM principles across Laboratory organizations and facilities. Although, the Laboratory resumption effort identified numerous failures of varying significance, LANL was not able to implement corrective actions that would prevent significant safety program failures. Of the failing programs, three stand out as having significant impact throughout the Laboratory – Work Control, Conduct of Operations, and Readiness Reviews. Improvements were made in these programs during the last year; however, the programs have yet to be consistently and effectively implemented. It is NNSA's belief that improvements in these specific crosscutting programs would significantly improve the implementation of other safety programs at the laboratory.

Implement a Work Smart Standard for the safety basis of non-nuclear facilities

Although LANL did not deliver a resource loaded implementation plan/schedule to establish non-nuclear facility categorization, LANL personnel walked down 600 facilities and identified 90 improperly categorized facilities. NNSA recognizes this aggressive and responsible action by LANL as meeting the intent of performance measure even though agreed upon deliverables were not submitted.

Under this performance measure, the Laboratory was tasked with the completion of a chemical dispersion category limits determination to support the categorization of non-nuclear facilities with regards to chemical hazards and the revision of Laboratory Implementation Requirements (LIR) 300-00-05, *Facility Hazard Categorization*. Additionally, the Laboratory was to develop resource-loaded implementation plans for establishing non-nuclear facility categorization in accordance with LIR 300-00-05 and establishing non-nuclear facility safety bases in accordance with LIR 300-00-07, *Non-nuclear Facility Safety Basis*.

The Laboratory completed the chemical dispersion category limits and received concurrence from NNSA. The Laboratory also completed the revision of LIR 300-00-05 and received NNSA concurrence under Integrated Safety Management (ISM) commitments. The Laboratory developed a categorization plan for all non-nuclear facilities, but the plan was not resource loaded at the time of this evaluation as was agreed to in the measure. However, the Laboratory completed a detailed walk-down of some 600-office type buildings and of the 600 buildings walked-down, the Laboratory discovered concerns with 90 of the facilities such that the facilities could not be defended as simply an office building.

Significant Accomplishments

- Completed the revision of LIR 300-00-05 ahead of the OE Scheduled Milestone.
- Completed revision of the LIR 300-00-07 and received NNSA concurrence under ISM.
- Developing a notebook for each Responsible Division Leader (RDL) that owns a non-nuclear facility that validates the categorization of the facility.
- Resource loaded and applied resources to achieve the walk down of 600 purportedly Low Hazard facilities and discovered 90 for which the categorization was not defensible. This is a very responsible and accountable indicator of the Laboratory doing the right thing regarding non-nuclear and radiological facilities.

Ensure effective implementation of an ES&H corrective action management program, including institutional corrective actions derived from violations enforceable under Price Anderson Amendments Act.

Five specific areas were evaluated of the Laboratory ES&H corrective action management program. Eighty percent were rated good. The Laboratory continues to improve in this area. NNSA is hopeful that LANL will continue to improve in this area and expand many of the capabilities that currently reside in the institutional areas of the corrective action management program to the lower tier organizations and facilities.

Measure: 8.2
Comply with and achieve continuous improvement in nuclear safety and quality performance under 10 CFR 830.

Measure 8.2 was rated as Satisfactory for FY2005.

10 CFR 830A was rated Satisfactory.

Under this portion of the performance measure, the Laboratory was specifically tasked with development and issuance of a Quality Assurance Program (QAP) description document and associated Implementation Plan. The Laboratory did submit a QAP and Implementation Plan to NNSA in February 2005 ahead of schedule. NNSA subsequently provided comments to the documents and the Laboratory plans to resubmit the revised Implementation Plan during FY2006 to incorporate those comments and reflect additional compensatory measures.

Progress in meeting QAP implementation milestones as described in the approved Operational Efficiency (OE) Project Execution Plan was a second element of this measure. The OE project instituted a Work Breakdown Structure (WBS) process that required formal change control. The QAP portion was managed through the QAP Implementation Project Team (IPT). Specific milestones for continued development of quality initiatives have been managed through the formal change control process and the project was on schedule during FY2005 except for implementation of institutional procedures for quality. Delivery of some of those procedures was re base-lined at Laboratory management direction.

The third element was to define, implement and verify the effectiveness of compensatory measures for gaps identified in the QAP implementation plan. The implementation plan did not fully describe compensatory measures in all areas, and NNSA subsequently requested additional information. The Laboratory did not complete determination of the effectiveness of cited compensatory measures.

The fourth element of this measure was that the Laboratory meet Phase I and II milestones of the Institutional Software Quality Management (ISQM). The ISQM program documentation was completed, performance indicators identified, and self-assessments completed. With the implementation of LIR 308-00-05 and associate implementation activities, the Laboratory met this element ahead of schedule.

The fifth element of this measure required the Laboratory to address all past due corrective action commitments to NNSA. These commitments were relevant to the QAP, Implementation Plan, Suspect Counterfeit Items, and responses to external audits and/or NNSA concerns. Of these commitments, all have been closed, included in the Operational Efficiency effort, or included in the I-Track system for final action to complete this element on time.

Consistent implementation of quality requirements overall within the Laboratory was in the early stages within many organizations. While the specific Appendix F criteria have generally been met, with some elements being delivered ahead of schedule, additional efforts are required to result in a fully implemented institutional quality program. The Laboratory is commended for the proactive manner they have employed during FY2005 to accomplish those initiatives achieved.

10 CFR 830B was rated Unsatisfactory.

Most contract deliverables were not met at a satisfactory level.

The gradient for Subpart B of 10 CFR 830 (nuclear safety) compliance focused on three main areas:
1. Reduction in the number of future TSR/safety basis (SB) violations through an effective causal analysis and lessons learned process;
2. Training and qualification of safety analysts to help with Safety Basis submittal quality; and
3. Deployment of a sustainable USQ review process.

In addressing the first of the focus issues during FY2005, the Laboratory committed a minimum of 57 violations of Technical Safety Requirements (TSRs) for its operating nuclear facilities. A majority of the TSR violations were directly traceable to a failure to adequately implement safety controls because, once approved, they were never formally verified as working. There is no single higher safety priority than having safety controls working because if they are not, then they will not be available to protect the workers and the public when an accident occurs. Safety controls not working at the Laboratory is an endemic problem, which the 57 TSR violations are one symptom of. The 57 TSR violations for FY2005 compares to 32 violations for FY2004 (for only ¾ of a year of operation) and 45 violations for FY2003. The trend in TSR violations was increasing rather than decreasing and certainly did not show an improvement or reduction in TSR violations.

The training and qualification of safety analysts with at least one safety analyst for each responsible division leader (RDL) for Laboratory nuclear facilities completing at least 50% of the safety analyst qualification requirements was evaluated as Satisfactory. During the review period, the Laboratory did obtain at least one safety analyst for each RDL owning a nuclear facility through 50% of the qualification requirements. Some completed all the skill areas and were waiting oral qualification boards to complete the qualification process. Related to this issue was the establishment of the Laboratory Safety Basis Academy (SBA). The Laboratory was commended for its progress on the SBA, which NNSA believes was needed to improve the quality of safety analysis documentation throughout the Laboratory and the NNSA complex.

A third issue involved the establishment of a Laboratory Unreviewed Safety Question Determination (USQD) sustainable review process based on known weaknesses within the USQD process. A functioning USQ process is the cornerstone to maintaining adequate Safety Bases and facility Structures, Systems, and Components (SSC) configuration management. NNSA formally documented in several memoranda that the Laboratory's USQ process was a systematically failed process. The Laboratory did complete the USQ Backlook Project; however, NNSA has serious concerns regarding the quality of the Backlook Project. In its final report LANL reported that there were only 5% of the USQDs reviewed in the Backlook Project that had problems, i.e., misidentified as negative when, in fact, they were positive and required DOE approval.

Safety basis quality was often directly related to the 57 or more TSR violations that occurred in FY2005. This was documented in many past Laboratory evaluations. NNSA continued to consider the quality of the Laboratory's first-time safety basis document submittals a significant issue and directly linked to the Laboratory's ability to perform vital NNSA program objectives. It is also related to the workload for the NNSA. NNSA saw little or no improvement over the FY2004 evaluation regarding this issue.

Significant Accomplishments

- Neared completion of the specification for the Safety Basis Academy
- Completed 14 safety basis related courses and hosted the annual EFCOG SAWG Work Shop during the review period
- Developed a qualification program for safety analysts.
- Met weekly with the NNSA Site Office to establish priorities for safety basis reviews.

Concerns

- As indicated by the 57 TSR violations, LANL lacked an effective TSR implementation and compliance program. Many of the FY2005 TSR violations occurred because the Laboratory failed to adequately plan and resource load TSR Implementation Plans. Many others occurred because the Laboratory failed to adequately implement the TSRs and properly verify adequate implementation of the TSRs.
- Lacked qualified safety analysts to perform quality independent reviews of DSAs/TSRs, as well as design documents like Systems Design Descriptions (SDD), Facility Design Descriptions (FDD), and Preliminary Documented Safety Analysis (PDSA). This problem should be addressed by the Laboratory's Safety Basis Academy; however, the benefits will not be seen until some future review period. This is directly tied to the poor safety basis quality that results in multiple Conditions of Approval (COAs), real time modifications to Safety Bases before approval, and rejection rate.
- USQD process has serious flaws, and at this time, NNSA has significant concerns regarding the defensibility of USQDs performed by the Laboratory. The USQD process is used to keep the SB documentation updated with regards to changes made in the facility. If the USQDs are flawed, it was deduced that the SB documentation was also flawed or not current.

Measure: 8.3

Maintain an environmental management program consistent with the DOE-approved baseline, funding levels, policy, and negotiated regulatory requirements.

- **Effectively integrate environmental stewardship into the ISM system.**
- **Effectively manage environmental compliance agreements.**
- **Effectively manage the direct funded environmental restoration and waste management programs.**

Measure 8.3 was rated as Satisfactory for FY2005.

The Laboratory's environmental performance improved over that of FY2004. The Environmental Management System (EMS) was implemented at LANL's Division level. The Secretarial 10-year goals on Pollution Prevention were met with the exception of Transuranic (TRU) waste. Regulatory compliance was Good. The Consent Order brought some closure to Environmental Restoration, as did the Federal Facility Compliance Agreement (FFCA) on Stormwater Management. The Environmental Management Baseline showed significant improvement in its development and an increased degree of formality (O413.3). Communication between NNSA and the Laboratory improved, thus reducing misunderstandings over objectives, methods, and performance metrics. A number of issues must be resolved, such as inadequate safety bases and nuclear safety implementation. Zero risk in the operation of environmental facilities is inappropriate management and extremely expensive to implement. However, complete neglect of good facility management practices at the Radioactive Liquid Waste Treatment Facility (RLWTF) cannot be allowed to continue, potentially jeopardizing the NNSA mission.

Effectively integrate environmental stewardship into the ISM system

It is a requirement of DOE Order 450.1 that the Laboratory must self-declare that an Environmental Management System (EMS) is in place by December 31, 2005. All LANL Divisions actively participated in EMS implementation. As of September 30, 2005, over 10,139 employees (91%) completed the new environmental awareness training through the EMS.

The EMS Description Document was Appended to the existing ISM Description Document, last revised in 1998, for the sole purpose of meeting the December, 2005 self-declaration deadline. The two were never fully integrated, however.

The Laboratory was seeking ISO 14001 certification of its EMS and a contract was awarded to a third-party registrar who completed an EMS Pre-Assessment September 2005. The ultimate goal was independent certification that a viable EMS was in place. The registrar team concluded that the EMS "has been effectively implemented and communicated" and that "the core elements of ISO 14001 have been addressed".

The outstanding evaluation determined by NNSA for the Laboratory's EMS implementation effort during FY2005 was a direct result of the success of the EMS Core Team in effectively overcoming entrenched Laboratory recalcitrance at the Division level regarding the acceptance of contemporary and/or innovative initiatives. Additionally, the commitment to obtain third-party certification that an effective EMS was in place was beyond the requirements outlined in DOE Order 450.1.

Effectively manage environmental compliance agreements

- Evaluation of results from Resource Conservation and Recovery Act (RCRA) self-assessment activities which occurred over six month intervals reflected a steady increase from the third and fourth quarters of FY2002 to the first and second quarters of FY2004, with steady improvement

noted in the third and fourth quarters of FY2004 and the first two quarters of FY2005. However, the results from the third and fourth quarters of 2005 indicated an alarming increase in the percentage of findings. New Mexico Environment Department's (NMED) annual inspection in March 2005 resulted in four findings, a substantial improvement over the FY2001 and FY2003 inspections, although the same number of findings was observed during the FY2004 NMED inspection. It should be noted, however, that the NMED inspectors verbally noted "significant improvement" over the FY2004 inspection.

- In February 2005, NNSA entered into a Federal Facility Compliance Agreement with the Environmental Protection Agency Region VI to regulate site-specific storm water releases from Solid Waste Management Units (SWMUs). The Individual Permit application and all other deliverables required under the Federal Facility Compliance Agreement (FFCA) for storm water were submitted on time. It should be noted that the Individual Permit received a notice of being "administratively complete" without modification. The SWMU Monitoring Plan and Watershed Storm Water Pollution Prevention Plan required under the FFCA were also approved without comment by the EPA/NMED.
- During FY2005, one single sample exceedance of contaminant concentrations under the National Pollutant Discharge Elimination System (NPDES) was noted for chlorine (maximum) which was an improvement over previous performance. The new NPDES Permit was submitted on time and also received a notice of being "administratively complete" without modification.
- As a result of the issues noted during the TA-50 NMED storm water inspection that the subcontractor responsible for the construction activities was replaced. The Laboratory successfully implemented a self-assessment program for activities conducted under the Storm Water Construction General Permit.
- The Laboratory was required to comply with the requirements of the American Indian Religious Freedom Act, Archeological Resources Protection Act of 1979, National Historic Preservation Act of 1966, Native American Graves Protection and Repatriation Act, and Executive Order 13007 "Indian Sacred Sites." There were no impacts to any cultural resources at LANL during FY2005.
- Deliverables that support the Site-Wide Environmental Impact Statement were on time, including institutional data calls across 14 areas, specific analyses of 21 projects and six major facilities (e.g., DARHT, RLWTF, TA-55), and overview analyses of all Los Alamos National Laboratory key and non-key facilities, projected over the next five years.
- All Clean Air Act (CAA) regulatory deliverables were completed on time with zero noncompliance during FY2005. Internal corrective actions were fully closed on or ahead of schedule.

Effectively manage the direct funded Environmental Restoration and Waste Management programs

- Submitted 62 Consent Order deliverables on schedule including 14 subject to stipulated penalties. NMED approved 18 plans and reports submitted by the Laboratory allowing execution of subsequent phased ER activities.
- Fifty-five sites met EM requirements for closure as recommendations for No-Further-Action and were approved by the NMED regulators.
- Strengthened their contract capacity from less than $15M to > $100M. Awarded several remediation tasks late in the fourth quarter FY 2005.
- Re-projectized the life cycle ER activities to better conform to DOE 413.3 and move towards integration of EM projects. Complete integration of ER WM and Decommissioning and Decontamination (D&D) was still in progress at the end of FY2005. Completed a draft Critical Decision 0 package for D&D at TA 21 in accordance with DOE O 413.3
- Developed and submitted an integrated FY 2006 work plan for the ER/WM, and D&D work at LANL before the end of FY2005.
- LANL needs to better capture accomplishments and successes that show a true reduction in environmental risk and EM liability at this site. The Laboratory needs more aggressive

benchmarking efforts against similar work at DOE sites. Development of a comprehensive Authorization Basis process that supports EM and the DOE mission is lacking. Environmental Restoration needs to develop a plan in conjunction with Nuclear Waste Infrastructure Services (NWIS) that provides an integrated institutional authorization basis strategy for waste management, environmental restoration and decontamination and demolition projects.

Significant Accomplishments

- The Consent Order with NMED was signed on March 1, 2005, setting requirements and schedules for the environmental restoration work.
- Implementation of an ISO 14001 conformant Environmental Management System (EMS) at the Division level.
- Improved RCRA compliance from the NMED perspective. The RCRA Corrective Action Plan was implemented in FY2004, and all FY2005 milestones were met.
- Pollution Prevention programs met the Secretarial Goals for Waste Minimization, except TRU waste. LANL received seven NNSA Environmental Stewardship Awards in FY2005.
- Environmental restoration cost performance was on target, and all required regulatory deliverables were submitted on time. Fifty-five restoration sites were completed in FY2005 exceeding expectations.
- Shipping of waste to WIPP resumed after an 18-month stand down, with 30 shipments since the resumption in April.
- As of September 2005, all legacy Mixed Low-Level Waste from the Compliance Order (MLLW) was disposed.
- Met all requirements for Clean Air Act compliance and systematically evaluated Radiological National Emission Standards for Hazardous Air Pollutants (NESHAPS), Title VI (refrigerants), and asbestos NESHAP performance for improvement opportunities.
- The FFCA on Stormwater Management was signed February 3, 2005. All key Clean Water Act regulatory deliverables were met, all storm water-monitoring systems were installed and are operational, and all corrective actions (Best Management Practices) were implemented per FFCA requirements.
- The Ecology program completed the Cultural Heritage Resources Management Plan and, for the first time, repatriated human remains and sacred objects from the Laboratory.
- The Legacy Waste Disposition Project committed to having Carlsbad Field Office perform as the subcontracting method for all future TRU scope to enable a more cost-effective approach.

Concerns

- Must obtain institutional support for safety basis development and analysis. In addition, a timely review and approval process are needed.
- Appropriate maintenance and other facility management practices must be implemented at RLWTF with tighter liquid waste acceptance criteria.
- Operation of the TRU Characterization project at TA-54/50 must be sustained. Appropriate calculation of the TA-54 Material at Risk (MAR) must be done to better manage operations.
- The Pollution Prevention program must focus on future risk-reduction opportunities. TRU waste volumes are a high priority that needs to be systematically addressed.
- Cost Performance Index and Schedule Performance Index were considered to be unsatisfactory for the legacy clean-up projects.

Measure: 8.4

Achieve continuous improvement in security performance through ISSM and risk management principles.

- **Demonstrate continuous improvement in the implementation of ISSM including line management directed self-assessments.**
- **Develop and implement appropriate plans and initiatives in accordance with DOE/NNSA policies so that NNSA expectations are addressed while balancing mission requirements with S&S resource allocations and new requirements.**
- **Effectively manage Accountable Classified Removable Electronic Media (ACREM).**
- **Effectively account for Special Nuclear Materials.**
- **Detect, deter, and mitigate foreign intelligence collection and espionage at the Laboratory.**
- **Implement corrective actions as a result of findings from external agencies in accordance with the approved timeline in the corrective action plan.**

Measure 8.4 was rated as Good for FY2005.

The Laboratory's Safeguards and Security (S&S) Program showed significant levels of improvement in FY2005 achieving Good levels of performance overall, while some high priority areas achieved Outstanding levels of performance. In NNSA's FY2005 Annual Survey Report, the Laboratory's overall S&S Program was rated Satisfactory (highest possible rating). The Survey noted numerous strengths that assure the protection of all DOE/NNSA assets at the Laboratory. These strengths included ownership and implementation of security requirements by senior line management; the adoption and implementation of the Deployed Security Model; many formal communication forums; and many highly qualified subject matter experts. These strengths were evidenced by the successful execution of the DX hydrodynamic experiments, stand-up of 19 institutional Accountable Classified Removable Electronic Media (ACREM) libraries and corresponding operations, support for the TA-18 Early Move project, the outstanding Protective Force operations, and the use of an Earned Value Management system related to budget planning and execution. The Survey noted also several positive initiatives, such as the development, coordination and implementation of the NNSA/NA-70 Program Execution Guidance (PEG), the Laboratory's Annual Operating Plan (AOP), the close working relationship between the Laboratory and Site Office security personnel, and the formal change control process established through the Protection Program Management Team (PPMT).

Demonstrate continuous improvement in the implementation of ISSM including line management directed self-assessments.

The Laboratory achieved Good levels of performance for improvement in the implementation of Integrated Safeguards and Security Management (ISSM) based upon the strength of two major initiatives: the adoption and integration of the Deployed Security Mode, and the 39% reduction in the most serious security incidents.

During FY2005, the Laboratory began the deployment of security professionals from S-Division to the line divisions to provide professional security personnel with consistent training and experience levels and to improve consistency of application of security requirements. One notable example of the benefit of this activity was the successful conduct of a critical hydrotest (3625). A Senior Security Advisor assisted line management's integration of S&S controls into all plans and integrated work documents thus insuring the successful conduct of this hydrotest.

Another example of outstanding effort was by the Security Incident Team. The S-2 Personnel reduced the most serious security incidents by 39% during FY2005. This team's key function was to develop lessons learned from security incidents and communicate them to the rest of the Laboratory (18 Security Smart publications). The Laboratory dropped the backlog of overdue inquiry reports from a high of 117 pending and 36 overdue down to 55 pending with none overdue. The Security Incident Team was commended for their efforts and for reducing the time to conduct an inquiry from months to within weeks thus providing line managers and workers more timely information on security incidents.

Another program that began to have good performance was the Professional Training and Development Program. Although not fully functional, it is improving. The Laboratory submitted the Training Approval Plan (TAP) to NNSA. NNSA approved the TAP and forwarded it to the National Training Center for their approval.

Although the Laboratory had several outstanding examples of continuous improvement in the implementation of ISSM, the Laboratory did not accomplish the goal of implementing an effective self-assessment program. As noted during the FY2005 NNSA Site Office Annual Survey, the "self-assessment program is not well defined or integrated and has not been fully deployed." The self-assessment program was a primary tool for the improvement of any security program and efforts to re-engineer the security self-assessment program and implement this critical program needs to be a primary focus for FY2006.

Develop and implement appropriate plans and initiatives in accordance with DOE/NNSA policies so that NNSA expectations are addressed while balancing mission requirements with S&S resource allocations and new requirements.

LANL achieved Outstanding performance in this area. All Design Basis Threat (DBT) Implementation Plan and Site Safeguards and Security Plan (SSSP) milestones were met with many of them being completed ahead of schedule. The TA-55 Vulnerability Assessment Report was delivered one month ahead of schedule and was reviewed and approved by the NNSA Site Office and NA-70. The SSSP Chapters 1-12 were submitted to NNSA one month ahead of schedule. The 2004 DBT Implementation Plan was delivered July 8, 2005, after the delivery date was accelerated from July 30, 2005, and was approved by NNSA/NA-70. Finally, the Laboratory met the 2003 DBT requirement of moderate risk for TA-55 by the end of the Fiscal Year.

Effectively manage Accountable Classified Removable Electronic Media (ACREM).

LANL was commended for the standup of 19 Classified Media Libraries (CMLs) and 12 satellite classified media libraries thus consolidating more than 23,500 items of ACREM. The standup process used by the Laboratory required significant interface between NNSA and the Laboratory, was validated by NNSA, and was approved by the Deputy Secretary of Energy. The process required the approval of CML procedures and the training of Classified Library Custodians (CLCs) to the new procedures. CLCs became Laboratory S–9 employees allowing for total focus on performing CLC duties. Through the consolidation, efficient standup process, and continued operations, the Laboratory demonstrated their commitment to maintaining an effective and strong accountability system for ACREM. By the end of FY2005, the Laboratory destroyed 2,368 ACREM items.

Effectively account for Special Nuclear Materials.

The Laboratory demonstrated significant improvement in managing and implementing a Material Control and Accountability (MC&A) program this year. MC&A was fully integrated in the work performed to transfer nuclear material inventories from TA-18. Major efforts resulted in the documentation and improvement of critical processes to be fully implemented during FY2006. The

hardware for the nuclear material accounting system was successfully upgraded enabling continued operation of the system until the software can be replaced. Funding for the hardware replacement was a capital conversion of NMT operating funds. The cost of a software replacement is estimated at approximately $5M and funding remains an issue. While the Laboratory's MC&A program received a marginal survey rating for the second year in a row, the actions taken in response to the assessment resulted in timely and integrated problem solving and solution development. NNSA-approved corrective action plans indicated closure of findings by the end of the calendar year. While the Laboratory's MC&A management and oversight organization continued to be plagued with staffing shortfalls, hiring actions currently in progress should relieve this situation.

Detect, deter, and mitigate foreign intelligence collection and espionage at the Laboratory.

The Laboratory's Counterintelligence (CI) Program performed in an Outstanding manner in FY2005. The success of the CI Office was measured by its ability to protect the Laboratory's employees, information and resources from compromise by foreign governments' intelligence services and agents. To this end, the CI Program provided 435 personal travel briefings, 460 personal travel debriefings, 3,031 personal awareness briefings, and 13,139 personnel awareness packages. Successes included the "Intrepid Tourist" endeavors, and the development of 5,288 analytical products, four Intelligence IIRS publications, and a four part "ISEC Knows Series." The CI Office effectively incorporated CI program components, i.e., Analysis, Operations and Investigations, Awareness and Training, and Cyber into an integrated and focused CI Program. Activities included providing awareness briefings to 423 Laboratory system administrators; designing, prototyping, testing, installing and making operational diskless workstations for the Laboratory CI classified network; and providing a point of integration between the Laboratory CI office, Cyber Security Group, and members of the U.S. Intelligence Community.

Although Laboratory cyber security accomplished significant work on a number of important initiatives (Red Network, diskless computing, corrective action process, etc.), NNSA is concerned that the Laboratory does not have adequate resources to address current and emerging cyber security issues (i.e. NNSA Policy Letters, expansion of Red Network, hardening of yellow, and wireless). NNSA was concerned that the Laboratory's primary means of segregating and ensuring access control to sensitive unclassified information were administrative rather than engineered; however, it appears the Laboratory is moving in the direction of engineered controls. NNSA did not see a documented formal process that demonstrated communication between line management and system administrators Laboratory-wide to ensure sensitive unclassified information can only be accessed by those authorized to do so.

Implement corrective actions as a result of findings from external agencies in accordance with the approved timeline in the corrective action plan.

The Laboratory achieved Satisfactory performance in this area, tracking 105 S&S corrective actions from external reviews and surveys. In FY2005, the Laboratory completed 51 actions with 37 of them validated and closed. The remaining corrective actions were open and on track. Although there were still many corrective actions open, the Laboratory made progress in all areas of S&S corrective action plan (CAP) management. This improvement and an increased interaction with NNSA was leading to more timely closure of CAPs and real time resolution of questions and concerns.

OBJECTIVE 9.0
Improve or maintain effective business processes and systems that safeguard public assets and support mission objectives.

Overall performance rating for this Objective is Good for FY2005.

The Laboratory maintained effective business processes and systems during the fiscal year and implemented a number of initiatives to improve the effectiveness of all its systems. The on-going effort to complete the implementation of an internal control program should provide additional assurance of the effectiveness of business and financial management processes, systems and practices that should safeguard public assets.

The Laboratory undertook a number of initiatives during the fiscal year to add quality and integrity to the Laboratory's business processes, practices and systems.

Measure: 9.1
Demonstrate effective internal business controls and processes to maintain acceptable Financial Management and Human Resources system and approved Procurement and Property Management systems. This includes the management of a risk-based, cross-functional, integrated, and credible assessment program.

Measure 9.1 was rated as Good for FY2005.

The Laboratory undertook a number of initiatives to improve its business control environment to support the administrative systems (Financial Management System and Human Resource System) and to obtain system approvals for its Procurement and Property Systems.

The Laboratory made significant progress since FY2004 in business, financial, and administrative operations. Performance in the functional areas of human resources and personal property were at a high level, and performance for financial management was Satisfactory due to some concerns that there may be some systemic deficiencies in internal controls. Continuing to be of concern, however, were on-going issues regarding the Laboratory's procurement operations, completing the implementation of the Enterprise Project and being able to integrate the Enterprise Project with any other new enterprise system.

Significant Accomplishments
The following were some initiatives that demonstrated how the Laboratory's internal business controls and processes maintained and supported its business systems:

- Human Resources Division developed 23 initiatives and created milestone project plans for their completion.
- LANL established a collaborative agreement with the Northern New Mexico Community College for the development of a Property Certification program to enhance the skills of Laboratory property management professionals.
- Property Management assisted in the Classified Removable Electronic Media inventory because of their inventory techniques, new bar code technology, and expertise in the inventory validation process.
- The only NNSA contractor to perform a physical fleet inventory accounting for all its 1,570 vehicles in FY2005. LANL was recognized as a leader among NNSA contractors in developing and meeting stringent and rigorous vehicle utilization standards.

- Representatives from the Supply Chain Management Division (SUP-2) and Chief Financial Officer (CFO) worked with the Laboratory's Engineering Sciences and Applications, Facility Management, and Environmental Divisions to bring the fueling station on-line and to obtain the funding necessary to build a fueling containment area.
- Procurement established a formal Self-Assessment Plan and System. Quarterly self-assessments were performed that demonstrated positive results on post award assessments that indicated quality exceeding 90% for purchase orders and a 99.5% for purchase card transactions.
- Purchase Card transactions increased due to an increase in threshold to process procurements with a value up to $5K. This resulted in cost reductions for processing purchase orders.
- The Procurement Division is moving from a Federal Acquisition Regulation based operation towards adopting commercial practices in order to streamline procurement operations. The Laboratory is finalizing a procedure entitled "Implementation of Commercial Procurement Policies and Procedures" that will streamline and reduce cycle time for processing procurement actions.
- The Procurement Division applied electronic tools to prevent fraud, reduce the processing of improper purchases and improves business effectiveness, and enhance customer satisfaction.

Concerns

- The Laboratory's Procurement Division had a lack of continuity in management that created serious morale problems. Deliverables were not always met and many findings that were previously identified by various internal and external parties were not addressed. Also of concern was the Laboratory's responsiveness to data requests and the quality of subcontracts submitted to the Board of Awards.

The Laboratory should make improvements in the following areas:

- Establish strong leadership and management of its Procurement organization.
- Provide a plan of action to address a missing computer and computer-related property identified during the FY2005 Sensitive Item Inventory.
- Improve its oversight of subcontractors' personal property administration.
- Maintain accurate property records database that includes correct bar codes, serial numbers, model numbers and manufacturers.
- Develop and execute a post-production integration plan for the integration and maintenance of new enterprise systems.
- Complete the implementation of an internal control program that consists of performing cross-functional assessments based on a risk-based methodology.
- Audit and Assessments Division's General Ledger Cost Corrections Audit identified a labor cost correction that crossed budget and reporting classifications that was made to "avoid cost overruns in the original program code. The correction moved cost for 336 labor hours from program code JL1T, Target Fabrication Facility, to CFMT, Target Fabrication Support.

Measure: 9.2
Demonstrate continuous improvement in the effectiveness of business processes and the information technologies that support these business systems (i.e., Financial Management, Human Resources, Procurement, Property Management, and Information Management).

Measure 9.2 was rated as Good for FY2005.

The Laboratory demonstrated continuous improvement in the effectiveness of human resources, personal property and financial management. However, opportunities existed to improve the effectiveness of procurement operations and in the on-going implementation of the Enterprise Project.

The Human Resource Information Systems were significantly upgraded in the latest release of Oracle as part of the Laboratory's Enterprise system improvements. Human Resources (HR) inventoried in-house best practices and developed an HR Desk Reference available on-line for all HR staff.

Information management developed a project management plan for Enterprise Systems Lifecycle Management and prepared a schedule for migration of legacy application as defined in the plan. However, the project management plan only addressed one application and not the many others that needed to be addressed. The need for an Enterprise-wide plan that addresses all enterprise applications still exists.

Measure: 9.3
Demonstrate improvement in cost effectiveness of both institutional processes and management systems.

Measure 9.3 was rated as Good for FY2005.

The Laboratory's management of costs to stay within the rate structure and associated budgets, and its management of indirect rate structure and execution of budgets within approved rates, demonstrated to NNSA the Laboratory's cost effectiveness of both institutional and management systems.

Opportunities to improve the effectiveness of both institutional processes and management systems existed in the following areas:

- Maintain accurate property records database that includes correct bar codes, serial numbers, model numbers and manufacturers.
- Develop and execute a post-production integration plan for the integration and maintenance of new enterprise systems.
- Complete the implementation of an internal control program that consists of performing cross-functional assessments based on a risk-based methodology.

Measure: 9.4
Demonstrate an effective integrated monitoring program that documents and tracks corrective actions and which addresses all internal and external business system review findings and recommendations.

Measure 9.4 was rated as Good for FY2005.

The Laboratory demonstrated its capability to monitor, document and track corrective actions that address internal and external business system review findings and recommendations. However, the Laboratory needs to assure NNSA that all findings focused at procurement operations are addressed in a timely manner. The Laboratory needs to ensure that a process exists for generating reasonable liability estimates for environment, safety and health that NNSA needs to book as part of its annual financial statements. The Laboratory needs to provide status on corrective actions taken to address findings identified in the FY2004 and FY2005 Financial Statement Audits.

Measure: 9.5

Improve integration and effectiveness of business and management systems by a projectized deployment of a commercial enterprise resource planning system and implementation of reengineered business processes. (LANL)

Measure 9.5 was rated as Satisfactory for FY2005.

The Laboratory was the first site in NNSA to have its Information Technology (IT) project management system certified by the Defense Contract Management Agency (DCMA). The Enterprise Project was managed using the Earned Value Management System (EVMS) that was certified by the DCMA. The project completed releases R3a Catalog Purchasing, R2b HR Self Service/Oracle Advanced Benefits and R2c Payroll Study. These releases were beginning to form the baseline of Oracle financial functionality.

The Laboratory needs to maintain its focus on completing the implementation of the Enterprise Project. Management of this project should ensure that the project would stay within scope, schedule, and budget. The Laboratory needs to address post-production concerns regarding the integration and maintenance of new enterprise systems.

OBJECTIVE 10.0
Sustain and/or implement effective Community Initiatives

Objective 10.0 was rated as Outstanding for FY2005.

The contractor realized much success in implementing effective Community Initiatives in FY2005. The Laboratory sustained and expanded upon its outreach methods with reference to science education, economic development and corporate citizenship. The Laboratory launched new efforts to better assess, integrate, and improve the effectiveness of their outreach activities and continued its proactive efforts to maintain close ties with northern New Mexico communities.

The Laboratory formed a Coordination Council to effectively address outreach activities and to make better use of the annual Community Leaders Survey to identify and understand the needs of the community. The Survey was expanded to 597 community contacts from last year's total of 410 addressing regional awareness; economic development/diversification; technology commercialization and business development; regional procurement; small business advocacy; leveraging major subcontractors; and quality of life issues. The additional survey contacts were key business and economic development leaders who would help give better quantitative and qualitative information about the Laboratory's economic impact on the region. The 2005 results will be used to strategically plan and prioritize Laboratory-wide outreach activities for the coming year.

A Laboratory Small Business Program Team was created to further coordinate and integrate cross-divisional small business advocacy and procurement compliance efforts. The team built upon the efforts started last year by the Laboratory's Small Business Advocacy team and Supply Chain Management Division's Small Business Office. The Regional Development Corporation (RDC) was the recipient of a $2M Kellogg Foundation grant to develop a northern New Mexico entrepreneurship system as part of a Community Technical Assistance Contract with the Laboratory Community Reuse Organization. Funding for the RDC grant application was provided by the Laboratory. The Technology Transfer Division launched new programs designed to accelerate the commercialization of Laboratory technology and generate economic impact. These programs included monthly "Innovators Forums" which provide networking opportunities for regional entrepreneurs, student outreach programs such as the "Innovation Challenge" that allowed students to compete to develop creative ideas for commercializing technology, a year-round MBA program piloted at the University of New Mexico and New Mexico State University; and the Visiting Entrepreneurs program which taps capabilities of proven entrepreneurs.

The northern New Mexico Math and Science Academy (MSA) continued to show substantive results expanding its program to include more teachers and students at more locations. The MSA evaluation report by the University of California Center for Research, Evaluation, Standard and Student Testing (CRESST) indicated extensive increased skill and abilities of staff and significant statistical improvement in student performance. Student performance scores in math and science increased by as much as 7.5% over the past four years for schools participating in the MSA Program. Through partnering efforts with KSL Services, the Laboratory's facilities maintenance and site support services contractor, the New Mexico Legislature and the LANL Foundations received almost $500K in funding to complement its own investment of $400K.

The Laboratory assisted New Mexico State University in designing and launching a new Master of Arts in Teaching degree program for Math and Science Academy teachers. The Laboratory facilitated new research partnerships with the University of New Mexico, New Mexico State University and New Mexico Tech and helped develop a new computational engineering curriculum at New Mexico Highlands University.

The Laboratory's cross-division tribal education initiative was effective in meeting the needs expressed by the Northern New Mexico Pueblos. The initiative, launched to build a Native American student pipeline for Laboratory employment, addressed areas where tribal entities expressed a need for assistance. These included math/science literacy, computer technology, natural resource management, robotics, reading/writing literacy, language preservation, academic tutoring, and grant writing assistance.

To enhance student understanding of mathematics and science and gain a better understanding of LANL/Pueblo cultural resource protection and preservation efforts, the Laboratory conducted six workshops for San Ildefonso Pueblo students. A panel of Native American and Hispanic LANL student interns shared their work experiences with college-student participants from across the country at the University of New Mexico Minority Graduate Bridge Program. The Laboratory's Government Relations Office Tribal Relations Team sponsored 14 Native American summer student interns in various LANL Divisions.

Los Alamos National Laboratory enhanced existing community initiatives ensuring community and tribal initiatives were developed, implemented, and communicated in collaboration with community constituents. The Laboratory demonstrated progress and improved its fostering of economic development and corporate citizenship through its educational activities and community outreach. However, no mechanism exists to determine the effectiveness of all the outreach activities being employed by LANL to ensure the focus areas are indeed where resources should be allocated.

Measure: 10.1
Leveraging the UC expertise and mission in science education, the laboratories will establish and maintain science education outreach programs with the joint goals of community outreach and substantive contribution to science education.

Measure 10.1 was rated as Outstanding for FY2005.

The Laboratory sustained and enhanced a broad variety of science education outreach activities during FY2005 and effectively promoted and publicized these activities internally and externally both in the Northern New Mexico community and nationally. The science education outreach initiatives helped improve the awareness, engagement, and proficiency of northern New Mexico teachers, students, and parents with respect to science and math. They supported the enhancement of the region's K-20 educational infrastructure, encouraged participation of students in LANL scholarship and student internship programs, and increased involvement in the LANL employment pipeline. This increased involvement in the LANL employment pipeline was demonstrated by: 23% of the Technical Staff Member hires were former participants in LANL's student internships; DOE Office of Science funding was obtained for seven undergraduate interns; and 14 Native American summer student interns were sponsored in various LANL divisions.

The Laboratory enhanced and expanded upon critical skills development, cross-division tribal education initiatives and science education in local communities and student internship programs for high school, undergraduate and graduate students, and mentors. The Laboratory exhibited its commitment to science education in the communities of northern New Mexico through programs such as: Science on Wheels, Adventures in Science workshops, Adventures in Supercomputing Challenge, Go Figure! Math challenge, Expanding Your Horizons workshops, Laboratory Education Equipment Gift Program, Northern New Mexico Math and Science Academy, Student Mentoring Program, and the Robotics and Rocketry Teachers workshop along with others.

LANL continued its regional science education outreach through a number of initiatives. The "Science on Wheels" exhibit visited 34 New Mexico schools positively impacting 6280 students. Through July 2005, 56 school groups involving 4753 students visited the Bradbury Science Museum. The summer Adventures in Science workshops hosted 130 students. The 15th annual Adventures in

Supercomputing Challenge competition involved 77 teams from 33 New Mexico schools. The final had 120 students from 36 teams who participated for prizes and $21,000 in scholarships. The Laboratory's Go Figure! Math challenge competition attracted 50 regional middle- and high-school students from Northern New Mexico. Expanding Your Horizons workshops were attended by 162 young women from New Mexico interested in careers in science and math.

A briefing was made to the LANL Oversight Committee of the New Mexico Legislature that led to $177K in new 2005 MSA funding commitments. The Laboratory co-sponsored (with Senator Bingaman and the LANL Foundation) a national conference to discuss K–12 science and math teacher professional development programs.

The Northern New Mexico MSA in collaboration with the Northern New Mexico Council on Excellence in Education continued to show sustained tangible results. It seeks to use effective professional development to improve education and has reached 86 teachers across five districts—Taos, Chama, Espanola, Mora, and Pojoaque, impacting over 2000 students.

The Laboratory's cross-division tribal education initiative to build a Native American student pipeline for Laboratory employment addressed areas where tribal entities expressed a need for assistance beginning with the Accord Pueblos. The Laboratory sponsored 14 Native American summer student interns and more than 450 students, from Cochiti Elementary, Jemez Day School, San Ildefonso Day School, and Santa Clara Day Schools. These interns and students participated in workshops conducted by LANL to learn about chemistry, engineering, electronics, mathematics, and physics.

Measure: 10.2
Support community and tribal initiatives that leverage community and corporate UC resources in order to foster economic development and corporate citizenship, including educational activities, regional procurement, and community outreach.

Measure 10.2 was rated as Outstanding for FY2005.

The Laboratory focused on receiving and prioritizing input from community leaders as one of its top priorities. The objectives for LANL were to improve regional awareness of LANL programs and efforts in the community, continually identify and understand regional economic development challenges, improve regional small business opportunities, develop an integrated, resource-loaded Laboratory-wide action plan to address regional issues, and develop a proactive environmental stakeholder involvement plan.

To improve awareness of LANL programs, resources and operations in the community, a Community Engagement Strategy was developed. The strategy employed a schedule for interactions with the community. In addition focused retreats were held with community leaders to develop strategies to optimize community programs and to develop solutions for more effectively integrating and aligning outreach efforts.

Laboratory staff participated in regional economic development events such as the New Mexico Summit on the 21st Century Economy and the 2005 Quality New Mexico conference. Laboratory staff participated also in meetings with Santa Clara (Pueblo) Economic Development Corporation and Los Alamos Commerce and Development Corporation to better understand local economic development issues.

To explore assistance options for New Mexico-based high-tech companies Laboratory staff worked with the Regional Development Corporation and the Los Alamos Commerce & Development Corporation. The Laboratory's Supply Chain Management Division recognized 35 Laboratory buyers for their efforts in awarding contracts to small, disadvantaged, HUB Zone, 8(a), veteran-owned, and woman-owned businesses.

The Laboratory worked to improve regional small business opportunities through its Laboratory Small Business Program Team's talents used to created, coordinate and integrate cross-divisional small business advocacy and procurement compliance efforts

The 2005 Intergovernmental Summit hosted by LANL and Santa Fe County saw nearly 150 tribal and state/city/county elected officials and community leaders attend to discuss regional collaboration opportunities. To help them develop data management policies and procedures LANL provided geographic information systems technical assistance to Santa Clara and Jemez Pueblos. LANL received a Quality New Mexico's Diamond award for supporting that organization with a loaned executive who promoted the use of quality principles among northern New Mexico businesses, Pueblos, governments, and other organizations.

The Laboratory took a proactive approach to environmental stakeholder involvement. It developed an environmental monitoring certification program curriculum for Northern New Mexico College and the Laboratory's environmental division hosted an informational public meeting on LANL's New Mexico Environmental Department Consent Order compliance and accelerated site-remediation activities and plans.

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