Fiscal Year 2007
Annual Performance
Evaluation and Appraisal

Lawrence Livermore National Laboratory

Prepared by:

Livermore Site Office
National Nuclear Security Administration
November, 2007

NNSA/LFO 00491

CONTRACTING OFFICER'S EVALUATION

The National Nuclear Security Administration, Livermore Site Office Manager reviewed and discussed the recommendations of functional managers and staff concerning the appropriate adjectival ratings with which to rate the University of California's performance in the management and operation of the Lawrence Livermore National Laboratory. Based upon this process, an adjectival rating of "**Outstanding**" is earned for Mission, and a **"Good"** is earned for Operations. This report, the "Fiscal Year 2007 Annual Performance Evaluation and Appraisal - Lawrence Livermore National Laboratory" provides the basis for my determination, and is hereby endorsed and approved.

Approval:

Camille Yuan-Soo Hoo

Camille Yuan-Soo Hoo
Manager
Livermore Site Office

Date: 11/13/07

FY 2007 Annual Performance Evaluation and Appraisal for Lawrence Livermore National Laboratory

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Introduction

This report was produced by the U. S. Department of Energy (DOE) National Nuclear Security Administration (NNSA), Livermore Site Office (LSO) to provide the Contracting Officer's written assessment of the Contractor's performance at the Lawrence Livermore National Laboratory (LLNL) under contract W-7405-ENG-48, Appendix F. Contract Appendix F defines the Objective Standards of Performance agreed to by DOE/NNSA and the University of California (Contractor or UC) to annually measure the Contractor's overall performance of its Science and Technology (S&T) Mission and its Operations. UC is eligible to earn program performance fee based on the Objective Standards of Performance listed in Appendix F of the contract.

There may be programs, systems, compliance requirements or observations not covered by Appendix F presented in this report. These additional observations are limited to items of performance that require the attention of the Laboratory Director, but are not effectively covered by Appendix F performance measures. Although these items may be included in this report, they do not contribute to the basis for the overall rating of Contractor performance under Appendix F.

Evaluation Process

The Contractor and NNSA have agreed to use a performance-based management system for Laboratory oversight as part of the contract. These standards are used for the appraisal and evaluation of work under this contract. The primary objective of this report is to provide a summary of the annual Contracting Officer's written assessment of the Contractor's performance and the amount of earned Program Performance Fee as specified in contract clause H.007 and H.014, respectively. The parties agree that the purpose of the Appendix F is to focus on strategic and mission-critical activities (i.e., the "critical few") and to appraise the Contractor's systems and outcomes in terms of:

- Are they producing appropriate national security, science and technology results? and
- Are they producing these results efficiently, safely and securely?

The Contractor will provide an annual Contractor's Evaluation Report assessing its performance. An annual Performance Evaluation Report prepared by the Site Office Manager will provide an evaluation of the Contractor's performance during the Appendix F appraisal period. DOE/NNSA will use the Contractor's Evaluation Report as the primary basis for the annual appraisal of Contractor performance, recognizing that DOE/NNSA will take into account other pertinent information, including that performance against each Strategic Performance Objective is subject to timely availability of adequate funding, as well as operational oversight, internal and external program reviews and audits, consistent with the intent of this Contract, in determining the annual appraisal for performance.

The validation effort is conducted by teams responsible for the various Performance Objectives and Measures represented in Appendix F. These teams, with guidance from LSO management, are responsible for developing an adequate, independent basis for assessing the quality,

credibility, and accuracy of the Contractor's self-assessment. These evaluations are used as a basis for the Contracting Officer's evaluation of the Contractor's performance.

Performance Period

Designed to capture performance for Fiscal Year 2007, the self-assessment period for the Laboratory is October 1, 2006 through September 30, 2007, unless otherwise specified in the Performance Objective. Significant performance data addressing fiscal year end data and information is to be assessed by the Laboratory and provided as a supplement to the self-assessment. The Contractor provided the self-assessment of LLNL, supplemental information and proposed rating to LSO in July, 2007.

Overall Appraisal Results

This is the fifth annual contract performance assessment under the restructured Appendix F process. The Livermore Site Office (LSO) has worked closely with NNSA Headquarters, the Lawrence Livermore National Laboratory and the University of California (UC), Office of the President, to develop, negotiate and implement what we believe to be an improved contract assessment tool that focuses on completing the NNSA mission as defined in the NNSA Strategic Plan while allowing the contractor flexibility in determining how the work will be accomplished.

In assessing the performance of Lawrence Livermore National Laboratory (LLNL), the LSO considered, but was not limited to LLNL self-assessment, LSO reviews, external reviews and audits, NNSA HQ input and LSO daily operational oversight. Based upon these activities, LLNL has earned an "**Outstanding"** rating in Mission and a "**Good"** rating in Operations.

These ratings are supported by the following examples with the detailed LSO rating sheets attached.

Mission

LLNL, as an NNSA laboratory, is a key contributor to the Stockpile Stewardship Program and the National Security Mission. During 2007, LLNL highlighted notable scientific and technical accomplishments in several fronts including NIF, plutonium aging work, supercomputer simulations as well as tackling challenges of Weapons of Mass Destruction (WMD) proliferation and support of domestic security in countering terrorism.

<u>Performance Objective 1: Warhead Certification</u>
The contractor significantly improved consistency of application of QMU for Cycle 12, including primary baseline and secondary baseline modeling, evaluation of uncertainties, and definition and application of important failure threshold. QMU was used to identify high-leverage issues and guide S&T investments. Cycle 12 progress included completion of the Red Team review, DNT review, and LLNL Director's review. In addition, LLNL's success in winning the Reliable Replacement Warhead (RRW) competition was an excellent example of the use of the QMU methodology for a major warhead assessment. For the Annual Assessment, LLNL accomplished all assessment activities on time or ahead of schedule and within budget. The SAGSAT briefings were very well presented in June 2007. LLNL has led the way for the design agencies by incorporating discussions on the QMU process in the Annual Assessment Reports (AARs).

LLNL has been slow in replacing cliff charts with more informative ensemble of models approach. Implementation Plan needs to be more general and be able to apply to any QMU scenario. There is a need to continue to revaluate the underground nuclear test data and apply that information for use with QMU. Finally, there is a need to improve the consistency of application of QMU with the complex.

Performance Objective 2: Stewardship

In support of the Plutonium Experiments, LLNL has worked well to handle impacts the schedule for JASPER experiments. LLNL has supporting Phoenix very well and the project remains on schedule and within budget with good results on data leading up to a Full Function Test (FFT-2) at NTS in September at BEEF. LLNL provided excellent support to the design selection process for RRW and the LLNL/Sandia CA team won the design competition. In Campaigns, LLNL developed a multi-phase Pu equation of state (EOS) that combines theoretical developments in condensed matter physics, data from JASPER and Diamond Anvil Cell (DAC) experiments, and effectively utilized the ASC capabilities at the Laboratory in support of the Weapons Program. In the Advanced Simulation and Computing (ASC) program, LLNL completed all L2 milestones on time and certified each quarter that they were complete through detailed documentation, peer-reviews, or programmatic sign-off by the recipient of the simulation capability. The Laboratory completed L1 milestone to "Complete lifetime assessment for predominant pit types." LLNL personnel also worked with Pantex to install and qualify high-resolution x-ray system hardware (for pit surveillance) at Pantex. The NIF construction project is proceeding well on the Budget and Schedule, and LLNL scientists are currently using the Omega and Z facilities effectively to address HED needs.

JASPER re-categorization activities have halted Pu experiments. In addition, a draft Jason's report indicated LLNL had not addressed all of the Navy's concerns. Further, LLNL science efforts are not open enough to the community outside the lab and could significantly profit from interactions with outside science community entities. With respect to management, miscommunications led to efforts by LLNL to sell a neutron multiplying assembly (NUMA) at NIF to DTRA, against NNSA policy. Concerning the continuity of NIC baseline funding, directed change by NNSA to NIC baseline reducing FY08 funding by $8.23M adds risk to executing ignition campaigns in FY2010.

Performance Objective 3: Near-Term Weapons Program

LLNL closed the only open Nuclear Explosive Package (NEP) SFI for the B83 in April 2007. LLNL has also supported the SFI reporting process in an excellent manner. The W80 Interim Weapon Development Report was prepared and sent to SNL-CA for final release. LLNL certification support activities continued on schedule to support LANL W88 Major Assembly Release (MAR) in September 2007. LLNL successfully completed L2 milestones related to demonstrating manufacturing feasibility of RRW CA pit. A Quality Assurance Survey 3.0 conducted in March 2007on the LLNL Pit Surveillance Program reflected that LLNL surveillance activities of weapon components are performed in a controlled manner and in accordance with applicable Design Agency specifications, as well as conforming to QC-1, Revision 10 requirements. LLNL established a Technical Business Practices System and Guidance Team to ensure that the inter-site business practices effectively support the stockpile and contribute to a responsive NWC infrastructure.

The safety authorization basis issues at the NNSA Production Sites like Pantex involving the disassembly and inspection of weapons are making it increasingly difficult to execute the surveillance program in a timely manner. Another area of concern is the technical communications, coordination of equipment design, and agreement between LANL and LLNL on the details of equipment proposed for installation in TA-55/PF-4. LLNL received an IMR

from Pantex Site for shipment of a part that did not meet design requirements, resulting in an Occurrence Report that requires corrective action by the Detonator Surveillance Program.

Performance Objective 4: Nuclear Nonproliferation

The Laboratory successfully completed and commissioned Material Protection, Control and Accountability (MPC&A) upgrades for the last two of four Russian Federation Navy sites in the Kamchatka region. In addition the Laboratory organized the Integrated Nuclear Safeguards and Security Workshop to promote the adoption of modern safeguards and security practices in China. The Laboratory also performed systems analysis of safeguards effectiveness in a generic gas centrifuge enrichment plant using Livermore Integrated Safeguards Systems Analysis Tool (LISSAT). The Laboratory completed a design review of the 176-megapixel Sonoma video camera system, in preparation for the 2007 Tarantula tests at NTS, which enables persistent surveillance of facilities and regions of proliferation concern. Three scintillator materials were discovered that have promise for high-resolution detection and isotopic identification of nuclear materials: BaI2(Eu), and GdI3(Ce) are single crystals, and GdYAG(Ce) is a transparent ceramic with world-record light yield. The Laboratory commissioned new softcopy imagery dissemination capability that significantly enhances the ability to collect and analyze classified imagery, making it possible to download 300 digital images per day, as opposed to a 3 to 4 months delivery with film imagery. In addition, the Laboratory created the Nimblegen chip containing all known virulence and antibiotic-resistance genes for BioWatch organisms, with very sensitive detection levels achieved against actual BioWatch backgrounds. Finally, the Laboratory designed and installed the first automated cargo handling system at San Francisco International Airport (SFO) for the Department of Homeland Security (DHS) Air Cargo Explosives Detection Pilot Program.

Performance Objective 5: Science, Engineering, and Technology Base

In addition to supporting the national security mission, innovation and scientific discovery are also vital to maintain long-term leadership in science and technology. LLNL conducts work funded under the Laboratory Directed Research and Development (LDRD) Program which enhances core competencies, supports the DOE and other federal agency missions, and emerging national needs.

The LDRD Program and other institutional investments at Livermore have continued to produce prize-winning scientific accomplishments, resulting in high-profile publications, and established advanced institutional research capabilities. Laboratory researchers were coauthors on all seven Stardust NASA mission Science papers detailing the first findings. Notable awards include the Hans A Bethe Prize, the Nadai Medal from the American Society of Mechanical Engineers, the James Clark Maxwell Prize in Plasma Physics, and five 2007 R&D 100 Awards. Commercialization of LLNL's technologies included the Adaptable Radiation Area Monitor (ARAM) and the Easy Livermore Inspection Test Explosive (ELITE) technology. Lilliputian Systems Inc, a LLNL licensee, was distinguished by the World Economic Forum, receiving the 2007 Technology Pioneer Award for micro-fuel cell technology for consumer electronics. During the first three quarters of 2007, LLNL collected $5.2 million in royalty revenue, executed 84 patent and copyright licenses and option agreements, executed three new CRADAs and six amendments, and reported 116 new inventions, 117 U. S. patent applications, 21 initial foreign patent applications, and 50 U. S. patents and 5 foreign patents issued for laboratory inventions.

Performance Objective 6: Infrastructure

The Laboratory completed the Device Assembly and Disassembly Facility (DAF) Glovebox Management Self Assessment and Contractors Operational Readiness Review (CORR). In addition it submitted DAF Criticality Experiments Facility (CEF) PDSA, Rev. 3, to NNSA/NSO for approval. Building 332 DSA implementation plan was developed. The Contained Firing Facility (CFF) was available for use 93%, and Building 851 was available 95%. The National Ignition Campaign continued to make excellent progress meeting all milestones and technical objectives on or ahead of schedule. The Laboratory received an R&D 100 award for "Continuous Phase Plate Optics Manufactured Using Magnetorheological Finishing." Facilities and Infrastructure Recapitalization Program (FIRP) B431 Demolition Project was successfully completed. Engineering Technology Complex Upgrade (ETCU), a Line-Item project was completed. The Tritium Facility Modernization (TFM) was 40% complete, on schedule and within cost. Facility Condition Index (FCI) for Mission Critical (MC) facilities is less than 3% and FCI for Mission Dependent - Not Critical (MD-NC) facilities is about 7%. LLNL achieved Readiness in Technical Base and Facilities (RTBF) performance goal for Facility Condition Index (FCI) 6 years ahead of the scheduled milestone. The first shipment of Special Nuclear Material (SNM) out of Laboratory was completed in full compliance with existing safety and environmental authorizations.

Operations

Performance Objective 7: Safety and Environment

For Integrated Safety Management System, product timeliness has improved this fiscal year but is still short of NNSA expectations for performance. The contractor submitted the 10 CFR 851 Worker Safety and Health Program (WSHP) on schedule and met requirements. In Systems Engineering, the contractor drafted Cognizant System Engineer (CSE) procedures. For Emergency Management the contractor completed all Emergency Readiness Assurance Plan (ERAP) deliverables, and completed all implementation plan deliverables to date for DOE Order 151.1C, Comprehensive Emergency Management Program. In Configuration Management, LLNL provided clearer expectations and assigned a seasoned configuration manager to aid the directorates and division with their execution of the requirements, and progress in configuration management implementation was notable within many directorates. In the area of Conduct of Operations, the contractor revised the LLNL ES&H Manual Document 3.5, and completed the Unreviewed Safety Question (USQ) process for Document 3.5. For nuclear safety and quality performance, the Laboratory completed training on LLNL's new USQ procedure, and completed an effectiveness review of USQ process. In Environmental Management, the Laboratory was on schedule to dispose of the forecasted amount of waste to the Nevada Test Site. In addition, the Laboratory exceeded the amount of waste disposed at the $0.50/ ft3 efficiency cost.

In the area of Integrated Safety Management System (ISMS) there are unclear roles and responsibilities throughout the institutional safety management programs, and ineffective implementation of feedback and improvement processes throughout the institutional safety management programs. The Laboratory is experiencing difficulty filling system engineer positions and the training program requires further definition. Additionally, the LLNL Emergency Programs Organization (EPO) will experience at least a 25% reduction in staff that may impact long-term commitments. Self assessment of the Configuration Management

program has not been performed in many of the Directorates and Configuration Management is not being applied immediately once a safety basis document is approved. Assessments of Software Quality Assurance (SQA) implementation indicate an issue with the flow down and implementation of SQA requirements to the facility and activity levels. The contractor also needs to focus on improvements to other facilities. The contractor needed a one year extension to complete its 10 CFR830 annual update for B332. There is a need to follow up to ensure USQ weaknesses are addressed. The Scheduled Triennial Review of Criticality Safety was not conducted. Finally, the Contractor needs to complete full implementation of ISO 14001 Environmental Management System within the line programs.

Performance Objective 8: Secure Operations

For Safeguards and security, the Annual Operating Plan (AOP) milestones and schedules were completed on time and validated as completed by LSO. The Laboratory was successful in sustaining the 2003 Design Basis Threat (DBT) protection strategy and developing plans for implementing the 2005 DBT protection strategy. In addition, the OIG reported that LLNL was a "notable exception" to problems at other NNSA sites in meeting unclassified cyber certification and accreditation requirements. Port-blocking requirements were applied. The contractor also streamlined classified cyber security plans (14 to 1). The Laboratory is also proactively beginning to implement the National Systems Security Plan. In Counterintelligence (CI), three CI methodologies were developed by the CI Office will be benchmarked throughout the CI enterprise. CI Office continued to set the "Gold Standard" for collections by publishing 131 Intelligence Information Reports (IIR), the largest number within the CI enterprise. The CI Office's publication *Russia Outlook* was widely distributed.

Further emphasis by LLNL on self-assessment activities is needed to reduce the significance of DOE and NNSA program evaluations in identifying areas of LLNL non-compliance with federal security requirements. In addition security plans still need to be updated to reflect current policies (i.e. port-blocking).

Performance Objective 9: Business Systems

The Laboratory completed implementation of the Financial System Upgrade (FSU), and streamlined its indirect rates. Human Resources implemented the eXIT program and deployed an institutional electronic termination system (VISION). In Property Management, results for FY 2007 inventory of Attractive items remains at a high accountability rate of 99.92 percent. Equipment inventory resulted in a find rate of 99.94 percent. In addition the Laboratory accounted for 100% of its Precious Metals inventory for three consecutive years. The Audit Tracker System (ATS) was effective in monitoring Management Corrective Actions (MCAs) to closure, and forty eight MCAs were closed. In Human Resources, attrition rate through 3rd quarter was less than 3% for DP critical skills, and the Lawrence Fellowship retention rate for FY02-present was about 70%. In its effort to reduce personnel, the Laboratory's FY 2007 Q2 Average DP FTEs was 4,782, well below the required level of 5,013. In the area of training, the Laboratory earned the American Society for Training & Development (ASTD) BEST Award, using key outcome metrics and best practices results to document award justifications. In science education outreach, more than 1,000 students and teachers participated in new events at Tracy schools including the "Got Science?" program.

Performance Objective 10: Transition

For transition, the contractor sought out lessons learned from transitions at other sites, and used them to plan out its pre-transition activities. The early start allowed time for the incumbent and successor to address administrative and process issues. The contractor also identified and assessed critical activities that allowed the successor to assume full accountability and responsibility for LLNL. While preparing for this transition, the incumbent ensured that work continued uninterrupted, deliverables were achieved, and safety, security, and environmental protection were maintained.

Overall LLNL Rating

Mission		**Outstanding**
1.	Conduct warhead certification and assessment actions using the Quantification of Margins and Uncertainties (QMU) methodology.	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 site 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.	Outstanding
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		**Good**
7.	Maintain safe and environmentally sound operations in an efficient and effective manner in support of mission objectives.	Satisfactory
8.	Maintain secure operations in an efficient and effective manner in support of mission objectives.	Good
9.	Improve and maintain effective business processes that safeguard public assets and support mission objectives; maintain and develop a skilled workforce to support mission objective; and sustain community initiatives.	Outstanding
10.	Perform and complete Pre Transition and Transition Activities.	Outstanding

Detailed Appraisal Results

Mission

Performance Objective 1	Outstanding
Conduct warhead certification and assessment actions using the Quantification of Margins and Uncertainties (QMU) methodology.	

Performance Measure 1.1	Good
In coordination with the other NNSA weapons laboratories, continue to refine, document and implement a common certification/assessment methodology based upon the August 2006 QMU workshop.	

LLNL accomplished all QMU requirements for this measure as required without exceeding expectations. The Laboratory continued to improve consistency in the area of Primary baseline and Secondary baseline modeling applications and evaluation of uncertainties. LLNL has also continued to improve consistency in the application of QMU in support of Cycle 12(detail Classified). Other significant accomplishments in FY07 by LLNL under this performance measure include:

- Consistent definition and application of important failure threshold.
- QMU used to identify high-leverage issues and guide S&T investments.
- Further development of methods for combining uncertainties for the Objective Measures 1.1 and 1.3
- QMU-driven assessment plans in development for legacy stockpile systems
- QMU-driven assessment and certification plan for RRW-1 in development
- Continued briefings DOE/HQ on for the Objective Measures 1.1, 1.2 and 1.3
- Red Team review - complete.
- DNT review - complete.
- LLNL Director's review - scheduled.
- 2nd LLNL/LANL joint review - scheduled.

In FY07 LLNL and DNT in particular continued to provide significant contributions in the application of QMU across the NNSA Complex (LLNL, LANS, and SNL), including briefings on QMU methodology to multiple of audiences throughout the NNSA.

Notes

LLNL has been slowly addressing Dr. Orbach's request for input to replace the notional cliff-charts with a more informative ensemble of models approach. An area of concern is the LLNL approach of using existing warhead certification plans as the Implementation Plan for QMU at their site. It was NNSA's intention for the Implementation Plan to be more general and be able to apply to any QMU scenario.

There is a need to continue to revaluate the underground nuclear test data and apply that information for use with QMU. In addition, the consistency of application of QMU with the complex needs to be improved.

Performance Measure 1.2	Outstanding
Demonstrate application of the common certification/assessment methodology, (QMU) in major warhead assessments and the certification of Life Extension Program (LEP) warheads.	

Although LLNL is not directly involved in any LEP work as a primary other than QMU works covered under PM 1.1 and 1.3, the Laboratory provided an outstanding level of support Over the last several years on QMU methodologies of various types used for many DNT activities, ranging from the W80-3 Life Extension Program (LEP) and the W88 independent assessment through surveillance to various engineering developments. QMU is being used successfully for a variety of warhead assessment activities.

LLNL's success in winning the Reliable Replacement Warhead (RRW) competition was an excellent example of the use of the QMU methodology for a major warhead assessment. The margins and uncertainties were adequately quantified, and the UQ determination was credibly supported through a large number of sensitivity calculations.

Performance Measure 1.3	Outstanding
Complete the annual assessments of the safety, reliability, and performance of all warhead types in the stockpile, including conclusions on whether nuclear testing is required for resolution of any issue, the adequacy of Stockpile Stewardship tools, and other issues as required by law. Support NNSA as required during interagency and community coordination of the Annual Assessment Process.	

LLNL has provided an outstanding level of support in performing physics and engineering peer reviews and other project activities required to help maintain momentum, especially on the W88 Pit Manufacturing and Certification project for LANL. This performance measure was an extremely important mission for LLNL in FY2007 and on an annual basis in support of Stockpile Stewardship. The annual assessment reporting process and the work that was accomplished to support the completion of that reporting process were key activities under this performance measure. The FY03 National Defense Authorization Act (NDAA) provided the specific guidance for the annual assessment process and the deliverables for LLNL included: providing input to the cycle surveillance report, submitting Annual Assessment Reports (AARs) for each weapon system to the Project Officer Group (POG) and NNSA Headquarters, briefing the STRATCOM Strategic Advisory Group Science Assessment Team (SAGSAT), and submitting the Laboratory Director's letters to the Secretary of Energy for submission to the President. LLNL will submit AARs for the following weapon systems: B83, W62, W80, and W87. For the W84 an AAR was not required, only a joint (LLNL and SNL) safety letter was developed and published to report on the safety of the warhead. LLNL has consistently performed this measure in an outstanding manner each year. LLNL accomplished all assessment activities on time or

ahead of schedule and within budget. The SAGSAT briefings were very well presented in June 2007. LLNL has led the way for the design agencies by incorporating discussions on the QMU process in the AARs. The activities that LLNL conducted in support of Nuclear Safety Research and Development were performed in an outstanding manner and greatly contributed to the overall safety of the stockpile and nuclear operations.

LLNL continued to provide significant value for the funds provided by the W88 pit project in FY07 and has been extraordinarily customer-oriented in its acceptance and scheduling of work that was not in the original baseline. NA-118 assigns an adjectival grade of Outstanding for performance measure 3.3.

Performance Objective 2	Outstanding
Develop with NNSA and implement long-term, balanced, integrated stewardship.	

Performance Measure 2.1	Outstanding
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. In cooperation with LANL, develop and execute a program of hydro-tests and subcritical experiments that addresses assessment and certification needs.	

LLNL has provided an outstanding level in support Long-Term Integrated Stewardship program. In support of the Plutonium Experiments, LLNL has worked well to handle impacts the schedule for JASPER experiments. LLNL has managed and conducted the activities supporting Phoenix very well and the project remains on schedule and within budget with good results on data leading up to a Full Function Test (FFT-2) at NTS in September at BEEF. In area of hydrodynamic testing, LLNL has performed in a very proactive manner. LLNL was integral to developing a new format for the National Hydrodynamic Test Plan which structured the plan so that the key information is readily accessible for NNSA managers. Additionally, LLNL conducted and reported on the various hydrodynamic tests with great attention to detail and clarity.

Notes

JASPER re-categorization activities have halted Pu experiments. The remaining FY07 dynamic Pu experiments have been delayed as a result. This is work associated with Jasper experiments. These experiments are driven by the Plutonium plan and LLNL's Implementation plan.

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

LLNL has provided a significant level of support of Weapons Design and Analysis. LLNL provided excellent support to the design selection process for RRW and won the design competition. LLNL has continued to support the next phase of the study very well. LLNL provided excellent initiative and support during the Life Extension Options (LEO) process. LLNL worked diligently to ensure that the latest technical information was included and an integrated report produced.

LLNL participated in a proactive leadership role in the preparation of these documents. The RRW competition represents the potential start of an era of transformation to a stockpile with high-margin weapons that can be certified without nuclear testing. The LLNL/Sandia CA team won the RRW design competition and deserves commendation for this achievement. The emphasis on a system efficiency approach required a design (and supporting analyses) that

resulted in a load reduction on the production complex, an efficient approach to pit manufacturing, an innovative gas transfer system, and selection of major components from the tested inventory with an UGT history. LLNL's efforts in planning the Thermonuclear Burn Initiative (TBI) and the Dynamic Plutonium Experiment (DPE) strategy has been important for design and analysis activities in the future.

Notes

It has been difficult for LLNL to address all of the Navy concerns when there are discrepancies between NNSA's and the Navy's preferences. With regard to LLNL's response to concerns by the JASONs, NNSA was under the impression that their concerns had been addressed until their report was issued in draft. LLNL's follow-up could have been crisper in addressing the JASONs' issues which could have reduced the concerns raised by JASONs.

Performance Measure 2.3	Good
Develop and demonstrate Science Campaign models, experiments, and capabilities that support the ongoing needs of stockpile assessment and certification.	

LLNL has provided a very good level of support in this area. In spite of FY07 Budget constraint, LLNL's scientific activities were innovative and of a high caliber. The relevance of the Predictive Science Program activities to the near-term and long-term needs of the Weapons Program is well thought out. The Directorate developed a multi-phase Pu equation of state (EOS) that combines theoretical developments in condensed matter physics, data from JASPER and Diamond Anvil Cell (DAC) experiments, and effectively utilized the ASC capabilities at the Laboratory in support of the Weapons Program. The scientific team received commendation for this achievement from NA-10 (Awards of Excellence).

The Laboratory’s efforts in the multi-scale modeling designed to understand material strength and deformation under dynamic loading has been outstanding.

Notes

While LLNL has performed good science and connected in some ways to the broader science community, there are areas where these efforts are not open enough and could significantly profit from interactions with outside science community entities. The development of verification, validation and uncertainty quantification is being done largely in house; parallel to the HQ led efforts, and is not visibly tied to the broader community. While the work is certainly exemplary, a tighter coordination is important. In HEDP, the lab had not aggressively pursued the inclusion of ideas or personnel in leadership positions from the outside defense or even LLNL community that could help garner widespread interest in NIF science. Similarly, LLNL has not aggressively sought any sound technical alternatives for NIC.

With respect to management, miscommunications led to efforts by LLNL to sell a neutron multiplying assembly (NUMA) at NIF to DTRA, against NNSA policy. While this was caught and corrected, it did require HQ intervention. Jasper delays have also resulted in some red level 2

milestones. Regardless of the origin of those delays which are partly attributable to government actions, the outcome was that work was not completed as planned.

Performance Measure 2.4	Outstanding
Develop and demonstrate Advanced Simulation Computing (ASC) capabilities that support the ongoing needs of stockpile assessment and certification.	

LLNL has provided an outstanding level of support in the Acceleration Simulation and Computing (ASC) program.
To date, LLNL has completed all L2 milestones on time and certified each quarter that they were complete through detailed documentation, peer-reviews, or programmatic sign-off by the recipient of the simulation capability.

- LLNL did an exceptional job of leading the ASC Purple L-1 milestone activity and was exemplary is implementing and operating this first-ever dedicated capability supercomputer for the benefit of the weapons complex.
- LLNL continues to provide superb service for the technical editing of the ASC Implementation Plan.
- LLNL provides consistent and thorough responses to budget-related requests
- LLNL has done an exceptional job in coordinating the TLCC technical requirements with the Tri-Lab and in the preparation of the procurement documents.
- LLNL did a great job with the CD-0, Mission Need, for Sequoia.

Performance Measure 2.5	Outstanding
Continue to improve and apply tools and models for prediction of systems, subsystems, and/or component lifetimes for FY 2007, determine and recommend a technically defensible estimate of the pit lifetime for the primary of each of the weapons systems for which LLNL is responsible.	

LLNL has provided an outstanding level of support in performing Nuclear Weapons Lifetime Prediction in support of the Long-Term Integrated Stewardship program. While volume of work supporting pit lifetimes was conducted prior to and in support of the FY 2006 L1 Milestone to provide such lifetimes by system, LLNL continued to improves its predictive capability for lifetimes in many areas, including pits, canned subassemblies and cases, high explosives, non-nuclear materials, non-nuclear components, and systems. LLNL provided the weapon system managers for the LLNL systems with aging and lifetime assessment reports and briefings. LLNL also presented their analysis of lifetime assessments and modeling development to the STRATCOM Strategic Advisory Group Science Assessment Team (SAGSAT) in June 2007. Additionally LLNL presented their initial assessment on aging of the WR-1 design to the JASONs in June 2007. LLNL has also performed in an outstanding manner working with Pantex for the installation and qualification of a non destructive pit diagnostic. There have been challenges with the project, but LLNL has led the way by being proactive in coordination, keeping NNSA management informed, and providing on-site support.

Performance Measure 2.6	Outstanding
Develop and implement a collaborative and complementary program of experiments at High Energy Density (HED) facilities that supports assessment and certification needs.	

LLNL has provided an outstanding level of support of High Energy Density (HED) program. HED facilities and HED science constitute one of Livermore's core strengths. The NIF construction project is proceeding well on the Budget/Schedule. LLNL scientists are currently using the Omega and Z facilities effectively to address HED needs.

An excellent series of experiments was carried out to validate the energy balance models. NIF Early Light experiments, to date, have been very successful. A-Program is developing a high-energy x-ray backlighter for HED measurements at laser facilities. NIF completion and the potential for HED experiments at NIF will be essential for addressing HED related issues. LLNL continues to exhibit leadership in HED activities and the strong attempts by the Laboratory to collaborate with outside organizations.

Performance Measure 2.7	Outstanding
Develop, implement, and lead an integrated national program (National Ignition Campaign (NIC)) with the goal of executing a credible ignition experimental campaign on NIF in 2010.	

LLNL has provided an outstanding leadership in performing the National Ignition Campaign (NIC). The National Ignition Campaign (NIC) activities comprised of program overview, ignition design, integrated target design, and integration of NIC activities with the NIF project. Given that NIC involves several Directorates at LLNL and institutions outside the Laboratory (LANL, Sandia National Laboratories, Laboratory for Laser Energetics at the University of Rochester, and General Atomics), the integration and coordination of the national program has been on the right track. Experiments at the Omega facility and Sandia (Z Pinch) continue to provide excellent results for NIC target design needs.

With the NIF project completion relatively close, the transition from NIF construction to NIC appears to be well planned, and executed. The Directorate continues its focus on the success of this transition. LLNL is on target toward the NA/HQ goal of NIC becoming a logical path toward the use of NIF as a user facility.

Performance Measure 2.8	Outstanding
In cooperation with LANL and NNSA HQ, continue the development and implementation of an integrated program and governance model for plutonium capabilities of LANL and LLNL to support the overall NNSA strategic requirements.	

LLNL has provided an outstanding level of support in performing Plutonium Capability. LLNL has performed in an outstanding manner in supporting the overall modeling effort for plutonium by ensuring that those models have an age-aware component. The work conducted to gain such age related results has been closely coordinated with the overall plutonium experimental and modeling effort.

Performance Measure 2.9	Outstanding
In support of Responsive Infrastructure, continue to work with the NNSA Transformation office in completing the implementation plan and in monitoring the current state of responsiveness via defined metrics. In the broader arena, continue to look for and implement efficiencies within LLNL and support the implementation of efficiencies throughout the NWC consistent with the 2030 vision, mission, and implementation strategy.	

LLNL has provided an outstanding level of support Responsive Infrastructure (RI). LLNL has supported the areas of transformation centered around Responsive Infrastructure and Metrics in an outstanding manner. LLNL has coordinated and integrated their work in this area very well with NNSA managers and other site around the complex.

Performance Objective 3	Outstanding
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.	

Performance Measure 3.1	Outstanding
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).	

LLNL has provided an outstanding level of support in Surveillance and SFI program. LLNL closed the only open Nuclear Explosive Package (NEP) SFI for the B83 in April 2007. LLNL has also supported the SFI reporting process in an excellent manner. For this Measure, the performance requirements include the annual assessment of the safety, security and reliability of the LLNL stockpile systems, the prompt closure of any SFI's, and the surveillance of LLNL systems. LLNL provided technical oversight and support to the Production Agencies as they conducted the activities associated with the stockpile surveillance cycle including disassembly and inspection, component evaluation, flight tests and associated data analyses of those tests. As a result of surveillance, some minor concerns have been noted on LLNL weapons; however, to date, none has been judged significant enough to warrant opening an SFI. There were four open SFIs, with one having been opened in FY06. LLNL closed 3 of the four SFIs during FY07.

The safety authorization basis issues at the NNSA Production Sites like Pantex involving the disassembly and inspection of weapons are making it increasingly difficult to execute the surveillance program in a timely manner. LLNL has instituted a Surveillance Transformation Project to re-examine its current surveillance requirements, eliminate low-value inspections and tests, and, where necessary, negotiate new surveillance requirements to obtain more appropriate data in accordance with the objectives of QMU.

Performance Measure 3.2	Outstanding
Deliver on the major milestones for the LEP in accordance with the joint DOE/DoD phase 6.x process. Continue to support LANL on the LEPs for the W-76 and the B61-7/11.	

LLNL has provided an outstanding level of support for LEPs. The Performance Measure 3.2: Deliver on the major milestones for the LEP in accordance with the joint DOE/DoD phase 6.x process. LLNL continues to support LANL on the LEPs for the W-76 and the B61-7/11. Uncertainty about DoD's plans for the future role of the cruse missile systems has resulted in cancellation of the W80 LEP however; LLNL's work in support of the W80 has been exemplary. Thus the principal performance metric here is associated with the completion of close-out activities for that LEP. An important ground test called FSET-Q2 must be completed in order to help resolve a W80 SFI associated with the insensitive high explosive. This test is scheduled to be finished by the end of FY07 and at this time can not be rated.

Performance Measure 3.3	Good

Deliver on Pit Manufacturing and Certification Project major milestones.

LLNL has provided a significant level of support in performing physics and engineering peer reviews and other project activities required to help maintain momentum on the W88 Pit Manufacturing and Certification project for LANL. LLNL continued to perform overflow plutonium machining and testing work from LANL in support of the development of a Pu damage database, and helped to minimize the impact on the LANL Pu manufacturing operations. LLNL continued to provide excellent support for pit shipments and radiography operations at the Superblock facility, crucial to achieving a Level 1 milestone. LLNL staff provided excellent support in helping LANL complete all of the required engineering evaluations on pit manufacturing activities. Other significant accomplishments in FY07 by LLNL under this performance measure include:

- The validation of hostile environment response characteristics of the LANL-manufactured W88 pit.
- Completed peer review efforts on the W88 secondary baseline assessment.
- Completed radiochemistry assessment of W88 primary on most significant test events using the LLNL independent methodology.
- Continued progress on die cast plutonium foundry development.
- Support to planning for consolidation of Cat I/II plutonium activities.
- Initial planning support for prioritizing manufacturing technology development for an RRW pit.

LLNL continued to provide significant value for the funds provided by the W88 pit project in FY07 and has been extraordinarily customer-oriented in its acceptance and scheduling of work that was not in the original baseline.

Notes

The technical communications, coordination of equipment design, and agreement between LANL and LLNL on the details of equipment proposed for installation in TA-55/PF-4 is an area of concern. LLNL pit technology development expertise is necessary to support resource shortfalls in the LANL pit development area, so LLNL is being asked by NNSA to develop some technologies that support the RRW pit and pit capacity increases. The technologies will need to be installed and used within TA-55/PF-4, and so close coordination and cooperation is required between the laboratories. An appropriate level of programmatic cooperation is occurring. However, the level of communications, cooperation, and collaboration between technologists is insufficient to minimize the design changes between LLNL tested designs and LANL implementation of the LLNL design.

Performance Measure 3.4	Outstanding
Meet directive schedule requirements.	

LLNL has provided an outstanding level of effort to meet/exceed this Performance Measure. This Measure refers to the assessment of the quality and timeliness of products and services associated with the production and surveillance of components. LLNL contributions to this milestone are not weapon products, but instead are engineering type services (e.g., weapon and component design definition, product specifications, and hazard analyses). LLNL continues to provide the required engineering services in a timely way.

Performance Measure 3.5	Outstanding
Provide technical support to production complex operations, including the Integrated Weapons Activity Plan (IWAP) or its successor, the weapons point of contact programs, and weapons response analyses.	

LLNL continues to provide timely comprehensive quarterly status reports on closure of Weapons QA findings. The LLNL Corrective Action reports demonstrate progress completing corrective actions from the Quality Assurance Survey 1.0 conducted in October 2006. Through reporting of these CARs and Quality Implementing Guidance, DTED W program continues to demonstrate outstanding quality assurance support. W program does an outstanding job communicating program status to LSO. A Quality Assurance Survey 3.0 conducted in March 2007on the LLNL Pit Surveillance Program reflected that LLNL surveillance activities of weapon components are performed in a controlled manner and in accordance with applicable Design Agency specifications, as well as conforming to QC-1, Revision 10 requirements.

LLNL issued two Incoming Material Reports for nonconforming parts from Los Alamos National Laboratory and Pantex Site in FY07 and received one IMR from Pantex Site for shipment of a part that did not meet design requirements. This shipment resulted in an Occurrence Report that requires corrective action by the Detonator Surveillance Program

Performance Measure 3.6	Good
Continue to implement and execute, in accordance with NNSA-approved plans, a weapons design and manufacturing quality assurance program consistent with NNSA requirements (QC-1, Rev 10).	

LLNL continues to provide timely comprehensive quarterly status reports on closure of Weapons QA findings. The LLNL Corrective Action reports demonstrate progress completing corrective actions from the Quality Assurance Survey 1.0 conducted in October 2006. Through reporting of these CARs and Quality Implementing Guidance, DTED W program continues to demonstrate very good quality assurance support. W program does an outstanding job communicating program status to LSO. A Quality Assurance Survey 3.0 conducted in March 2007on the LLNL Pit Surveillance Program reflected that LLNL surveillance activities of weapon components are performed in a controlled manner and in accordance with applicable Design Agency specifications, as well as conforming to QC-1, Revision 10, requirements.

Notes

The QAS 1.0 review of LLNL noted that while significant progress has been made to correct non compliance issues in the Weapons Quality program, additional corrective actions still need to be completed. Also, LLNL received an IMR from Pantex Site for shipment of a part that did not meet design requirements. This shipment resulted in an Occurrence Report that requires corrective action by the Detonator Surveillance Program.

Performance Measure 3.7	Outstanding
Develop and implement streamlined, multi-site, technical business practices with other Nuclear Weapons Complex partners.	

LLNL has provided an outstanding level of support for this Objective. This Measure was introduced in FY06 and relates to the need to improve multi-site business practices within the Nuclear Weapons Complex (NWC). LLNL established a Technical Business Practices System and Guidance Team to ensure that the inter-site business practices effectively support the stockpile and contribute to a responsive NWC infrastructure. Overall, most of the work performed under this Objective by LLNL has been outstanding. As suggested by the DNT Directorate Review Committee, LLNL needs to conduct the inter-laboratory peer review process for more technically explicit "terms of reference" to avoid misunderstandings.

Performance Objective 4	Outstanding
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.	

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

Noteworthy achievements include:

- Completion and commissioning of MPC&A upgrades for the last two (of four) Russian Federation Navy sites in the Kamchatka region; sustainability contracts to maintain the systems are in place at three sites (the fourth is still under warranty from the contractor).
- Organization of the Integrated Nuclear Safeguards and Security Workshop to promote the adoption of modern safeguards and security practices in China; LLNL also coordinated the logistics of the Chinese delegation's visit to multiple U.S. laboratories and facilities.
- Systems analysis of safeguards effectiveness in a generic gas centrifuge enrichment plant using LISSAT (Livermore Integrated Safeguards Systems Analysis Tool); the analysis can be leveraged for other safeguards effectiveness evaluations (e.g., GNEP).
- Leveraging of LLNL leadership of the DOE Morocco Sister Lab Arrangement to help expand DOE's nonproliferation efforts in North Africa; LLNL currently leads the DOE sister lab arrangements in Morocco, Egypt, Algeria, and Libya.
- Assignment of an LLNL analyst in Washington DC as Senior Advisor to the Under Secretary of State for Arms Control and International Security.
- Participation of LLNL technical experts in U.S. dialogue with other countries on Iran's nuclear program (e.g., briefing to IAEA Board Members on IR-40, participation in the EU 3 + 3 Experts Meeting).
- Participation of two LLNL subject matter experts in follow-up transparency activities in Libya for the trilateral U.S.-U.K.-Libya agreement (under which Libya eliminated its clandestine nuclear weapons program).
- Completion of >4500 export license applications (~10,000 individual entity analyses) for Commerce Department dual-use license applications; LLNL is the only national laboratory providing such reviews.

Performance Measure 4.2	Outstanding
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.	

Noteworthy achievements include:

- Demonstration of end-to-end exploitation (E-Cubed) with airborne and ground-based hyperspectral imaging data from NTS gas-release tests (E-Cubed autonomously integrates and analyzes overhead and ground data in space and time, with gas detection and identification available within hours of collection); use of E-Cubed Toolkit by a new technology development effort to integrate two disparate data sets and as an integration platform at NTS for field testing of sensors under development; the E-Cubed toolkit has been provided to Lockheed Martin under a conditional use agreement and is in the process of being licensed to ITT Corp.
- Design review of the 176-megapixel Sonoma video camera system, in preparation for the 2007 Tarantula tests at NTS; this system enables persistent surveillance of facilities and regions of proliferation concern.
- Successful demonstration of magnetic field detection using the LLNL-developed LIMMS (Laser-Interrogated Microstructures in Microspheres) system coupled with a UC Berkeley technique that uses a small cell of cesium atoms to rotate the plane of polarization of a laser beam in response to a local magnetic field; the technique has potential for remotely monitoring or locating facilities involved in WMD activities.
- Discovery of three scintillator materials with promise for high-resolution detection and isotopic identification of nuclear materials: BaI2 (Eu), and GdI3 (Ce) are single crystals, and GdYAG (Ce) is a transparent ceramic with world-record light yield.
- Successful measurement of radio-luminescence efficiency for solution-growth ammonium salicylate, a possible 10x lower-cost alternative to stilbene crystals for neutron detection.
- Delivery of preliminary regional seismic calibration products for the Persian Gulf and surrounding regions as well as event discrimination parameters for two regions of nuclear explosion monitoring interest.
- Successful prediction of an earthquake waveform in North Korea using LLNL-developed stochastic modeling techniques to integrate knowledge of the regional crystal structure; when generalized, this technique will make it possible to predict the seismic waveform from an explosion at an arbitrary point in the earth, greatly improving our ability to monitor regions where ground truth is lacking.
- R&D 100 award for developing an advanced radiation detection system for Large Area Imager.

Performance Measure 4.3	Outstanding
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.	

Noteworthy achievements include:

- Publication of 45 formal assessments for DOE, DHS, and WFO sponsors; of note, LLNL analysts coauthored two Presidential Daily Briefs, provided technical support and input for a draft National Intelligence Estimate, and led development of a multi-agency, multi-lab assessment for the National Counterproliferation Center.

- Assignment of LLNL subject matter experts in key positions in Washington DC, including Deputy National Intelligence Officer for S&T in the Office of the Director of National Intelligence (ODNI), Special Projects Advisor for the National Counterproliferation Center within the ODNI, and Director and Program Lead of the DHS Biological Threat Characterization Center.
- Receipt by a senior LLNL analyst, as part of an interagency team (including analysts from LANL, SNL, other agencies), of a Meritorious Unit Citation for contributions to a significant 2004-2005 intelligence assessment.
- Response, through NSTTAR, to 34 inquiries from DHS and other agencies on a wide range of subjects, including the effects of melamine on animals and humans and the polonium-210 poisoning of Alexander Litvinenko; NSTTAR responses tap into expertise in NARAC/IMAAC, FSC, BKC, NAP, CAPS, Z Division, and other LLNL capabilities.
- Commissioning of new softcopy imagery dissemination capability that significantly enhances our ability to collect and analyze classified imagery in a timely manner; it is now possible to download 300 digital images/day (with film imagery, it took 3-4 months to get an image from satellite to analyst's desk).
- Development of PRONET II tool to enable DHS/ICE export control investigators to query subject matter experts at LLNL; the LLNL PRONET team uncovered and provided specific investigative leads to ICE regarding procurement activities of a country of proliferation concern.
- Delivery of ADVISE 2.1; ADVISE is DHS's knowledge management architecture for ingesting, analyzing, synthesizing, and visualizing massive amounts of information from multiple, distributed, disparate data sources using semantic graph technology.

Performance Measure 4.4	Outstanding
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 WMD and other threats against the U.S. homeland.	

Noteworthy achievements include:

- Delivery of BKC material threat assessments (Burkholdaria, Rickettsia) for Project BioShield; demonstration of beta version of new Knowledge Management System in which individual tools are integrated and cross-linked via a new Web interface.
- Creation of Nimblegen chip containing all known virulence and antibiotic-resistance genes for BioWatch organisms, with very sensitive detection levels achieved against actual BioWatch backgrounds; funding has been received to construct a FMD virus strain/serotype chip and an avian influenza resequencing chip.
- Design and installation of the first automated cargo handling system at San Francisco International Airport (SFO) for the DHS Air Cargo Explosives Detection Pilot Program; completion of Phase 0 data collection for the Explosives Detection System optimization project.
- Completion of 3.5-year SFO Airport Biological Restoration Demonstration Project (joint with SNL); the LLNL-authored airport remediation plan based is in final interagency signoff and will soon be issued by EPA-DHS.

- Participation of HOPS in Lignite Wind (North Dakota National Guard), Elevate Shield (U.S. Coast Guard), Evergreen Sentry (Washington National Guard), and Golden Guardian 2006 and 2007 (California National Guard) exercises as well as security planning for Asian Games in Doha, Qatar.
- Successful demonstration of the prototype TELL (Training, Exercise, and Lessons Learned) system for realistic, interactive simulation-based training of incident management teams; the DHS Under Secretary for S&T approved use of TELL system in the train-up to California's Golden Guardian 08 exercise.

Notes

- BSL-3 activation: public comments on revised EA received and with DOE for resolution; awaiting authorization to operate from DOE/LSO; facility is still subject to potential legal actions to delay activation.
- Move of East Coast BioWatch laboratory: move to new location delayed pending NNSA/DHS agreement (SOW for 3-year lease of new facility approved by NNSA, with DHS). (4.4)
- Governance model for inter-agency reach back function of NARAC/IMAAC and LLNL operational role. (4.4)
- Lack of a strategic relationship with DHS, coupled with change in focus of DHS S&T Directorate (4.4)

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

Noteworthy achievements include:

- Continued execution of CAPS (Counterproliferation Analysis and Planning System) program; in addition to providing country-specific assessments and responding to more than 200 requests for technical assistance, CAPS expanded its scope to include assessments of the WMD capabilities of nonstate actors.
- Successful execution of the X-KE project; LLNL, in partnership with the Navy sponsor, designed, developed, and demonstrated scalable, high-performance computing technologies and algorithms for extracting actionable insight from multiple, disparate sources of maritime data.
- JCATS/JLOD (JCATS low-overhead driver) support of three major exercises, United Endeavor, Terminal Fury, and Ardent Sentry Northern Exposure; for the Terminal Fury exercise, which included 5000 participants in Hawaii and Japan, the JCATS/JLOD simulation contained 150,000 entities for a Common Operational Picture that linked live and virtual action with unmatched realism.
- High-fidelity hydrodynamic simulations of the breakup and debris generated from the impact of a ballistic missile reentry vehicle and a kinetic energy interceptor; LLNL analysis of a recent flight test has affected Missile Defense Agency (MDA) policy.

- Participation of ROCSS (Remote Optical Characterization Sensor Suite) on MDA FTG-02 and FTG-03 target-interceptor flight tests; for FTG-02, ROCSS generated the only short-wave infrared imagery of the intercept.
- Demonstration of Sierra data exfiltration capability: the high-bandwidth (10-Gb/s), long-range (~10-km), secure laser comm system ran continuously unattended for three days and met or exceeded performance requirements, even in inclement weather (high wind, fog, light rain).

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

Noteworthy achievements include:

- Activation and deployment of nuclear incident response assets (personnel and equipment) for several National Special Security Events, including President Ford's funeral and the State of the Union address.
- Deployment of RAP personnel to support an incident involved an overturned truck carrying a 4-gram plutonium-238 source.
- Hosting of a search exercise on board the USS Admiral Callahan in Alameda, with participation by response teams from multiple U.S. government agencies including DOE, DHS, DOJ/FBI, DOD.
- Participation in and provision of sources, equipment, and inject data for a multi-agency WMD terrorism exercise (with DOD Civil Support Teams, FBI); scenario was a commercial airliner taken down by private aircraft loaded with HE and radiological materials, with local assets unable to respond due to a natural disaster.
- Continued high-tempo participation by the operationally-ready teams in a wide spectrum of activities including response by the Radiological Assessment Program teams to several incidents, provision of RAP trainers to radiation response training conducted by several community agencies, and deployment of the Accident Response Group personnel to major national exercises;

Performance Objective 5	Outstanding
Enhance and nurture a strong science, engineering, and technology base in support of national security strategic objectives.	

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

Noteworthy achievements include:

- Numerous LLNL Scientists and engineers have been elected fellows of prestigious professional societies including AAAS, APS, IEEE, OSA, and SPIE. LLNL employees have also been elected to leadership positions in professional societies including AAAS, APS, and ASPE.
- Laboratory researchers have been selected for noteworthy prizes and awards such as two Gordon Bell Prizes, the Mary Lyon Award, the Al Sonntag Award, the Houtermans Award, the James Clark Maxwell Prize in Plasma Physics, three Nano-50Awards, the Nadai Medal, the Hans A Bethe Prize, and recently in 2007 five R&D 100 awards.
- Approved Non-DOE (WFO) sponsored projects continue to support LLNL's core competencies relevance and DOE and Homeland Security Missions along with other federal agency (OFA) missions for NIH/NCI, AF, Army, National Guard, Marine Corp, DARPA, MDA, DTRA, NASA, NSF, NRC, EPA, DOS, DOI, and DOT. Academia and non-federal entities are also supported by LLNL on WFO.
- External LLNL Directorate Review Committees (DRCs) met throughout the year to review the quality of science and technology and relevance to the mission. Several examples are provided below from the DRC's FY 2007 reports:

    1. The Energy and Environmental DRC found the quality of science and technology performed in the Directorate as Outstanding. The talent and achievements of the scientists and engineers are consistent with this level of performance. The Committee was impressed by the new hires and postdoctoral appointees. The contributions serve the well-being and security of the nation in meeting daunting challenges in the decades to come. For example, the DRC heard about the world record performance of an advanced hybrid-hydrogen vehicle and was impressed by the accomplishments of the past two years. The DRC noted with approval that the efforts to publish results in leading journals, and congratulated the numerous recipients of technical and scientific recognition and awards.
    2. The quality of science and technology work pursued by LLNL Computation Directorate continues to be Outstanding. The work and accomplishments are world class or world leading in a number of areas in both science and technology. Examples are in the area of data science; the work on knowledge discovery algorithms for semantic graphs is very innovative and has potential for high impact. Similarly, the development of multi-scale topological methods for data analysis is breakthrough work. The protein informatics research is world class,

and represents a great blend of biological domain knowledge and computational science.

3. The DRC found that the Physics and Advanced Technologies Directorate has accomplished Objective 5 in an exemplary and outstanding manner during the past year. The DRC notes that this accomplishment is based on years of good investments in R&D and infrastructure support. The Committee made clear that the maintenance of such an investment philosophy and sustainment of that culture are essential to future success of LLNL as well as the program directorate. The Committee pointed out the fact that seven of the 16 Weapons Excellence Awards given since 1994 had roots in LDRD, as well as in other fundamental work done by PAT, is strong evidence of the effective focus of this investment approach. Additional examples of achievements include the use of the Jupiter Laser facility to train individuals and prepare experiments for shots on the NIF Laser facility; the development of diagnostic techniques and hardware for understanding the capsule performance on NIF, the development of detector and diagnostics for both reagents and SNM; and the development of knowledge discovery an analysis to support operational decisions for intelligence and military operations. All of these projects are technically excellent, capable of immediate application and demonstrates the deep understanding of the priority needs of programmatic customers.

- Regarding enhancement of unique capabilities, LLNL commissioned and operates a short pulse-long pulse capability of the Titan petawatt class laser at the Jupiter laser facility and SuperSTEM, the next generation transmission electron microscope for nano-analytical characterization. Both facilities are the first of their kind in the world. Jupiter was funded by institutional investments and SuperSTEM was funded by NASA.
- The Office of Science indicated that the CAPT framework is an excellent tool for evaluating and improving global models utilizing ARM measurements. The Program on Climate Modeling Diagnostics and Intercomparison (PCMDI) at LLNL has built a core capability in model diagnostics and intercomparison. This is helping the community in devising metrics for measuring model fidelity. There is more than ample in-house expertise at LLNL in data management, archival and retrieval, including access to the community at large.

Notes

- Vigilance on ensuring ES&H, security, and meeting deliverables for WFO and DHS sponsors will be needed during the contract transition period as well as the realignment of WFO responsibilities.
- Retirements and attrition may impact key areas of scientific expertise and retention due to the contract transition.
- Would like LLNS to provide a formal written strategic S&T plan which includes how they plan to double WFO to support the Complex 2030 Plan and how LDRD investments will continue to support the DOE Strategic plan with technology roadmaps.
- Office of Science has indicated no issues with the CAPT framework; however, there is need for an additional scientist with strong expertise in deep cumulus cloud processes and

modeling. This gap needs to be filled during the upcoming year. Location of the PCMDI has caused some problems with international collaborations during their visits and has made work difficult. More efforts are needed to minimize barriers with PCMDI scientists collaborating with foreign scientists working on climate modeling and analysis.

Performance Measure 5.2	Outstanding
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.	

Noteworthy achievements include:

- The Laboratory Directed Research and Development (LDRD) Program at LLNL continues to support DOE's Strategic Plan/mission relevance in science, engineering, and new technology investments for FYs 2006 and 2007.
- Some originally-funded LDRD projects have received follow-on funding by other federal agencies such as NASA, DARPA, and DHS.
- Projects sponsored by LDRD consistently account for a large percentage of the patents issued for LLNL research. During 2006, patents based on LDRD-funded research accounted for 29 of the 63 LLNL patents or 46 percent.
- Collaborations are absolutely essential to conduct research and development. By collaborating formally and informally with other national laboratories, academia, and industry, LDRD researchers are able to access world-leading facilities and serve as active and prominent members of the scientific community. During FY 2006, the principal investigators on 56 projects were engaged in a total of 74 formal collaborations. These institutions consisted of the University of California (49%), other academia (34%), other DOE sites (7%), and other government agencies/industry (10%). These statistics do not include the numerous informal collaborations that PIs pursued in the course of their LDRD projects.
- Several LDRD funded projects published papers in high-profile journals. For example, LLNL analyzed samples returned from NASA's Stardust mission which were highlighted in a special issue of *Science*.
- Other noteworthy Accomplishments from 2006 funded projects are:

    1. A new method for wave propagation in Elastic Media.
    2. Development of Integrated Microanalysis of Nanomaterials.
    3. Ceramic Laser Materials.
    4. Transformational Materials Initiative
    5. Diffusion Monte Carlo
    6. New Fragment Separation Technology for Super heavy Element Research
    7. Nonequilibrium Phase Transitions

- In FY 2007, LLNL researchers won 5 R&D 100 awards; four of the five were based on LDRD-sponsored research. With the five new awards, LLNL has now received 118 prestigious awards.

- In addition to numerous awards, prizes, and recognition by the scientific peers, LLNL annually has external program Directorate Review Committees visit LLNL and assess their scientific and programmatic performance of projects. The reports and meetings provide a valuable tool to assess how LLNL is performing and assess the quality of science and technology and mission relevance by their outside peers. For example, a synopsis from the Chemistry and Material and Life Sciences DRC report made these notes on LDRD projects reviewed.

    1. "The DRC has witnessed the successful evolution of CMLS over the past five years. In terms of its traditional strength of Materials and Chemistry, the Directorate has developed a worldwide reputation. It has achieved this by several strategies. Management has focused on the intimate coupling of outstanding science with the programmatic mission of the LLNL. This review details of those areas: Pu science, static and dynamic properties of metals, transformational materials for the stockpile, NIF target fabrication, NIF optical materials damage, computational materials, and Bioscience. These outstanding science areas and others are in the critical path of NIF, DNT, and NHI. The science has been funded primarily, by exploratory and strategic LDRDs and loss of this flexible funding would be disastrous to the mission of the Laboratory. CMLS is hiring and retaining the best because of this scientific reputation and tradition."
    2. DRC comments are synopsized on their review of several LDRD projects:

        1. Optical materials damage and mitigation. Discussions described the technologies and strategies for identifying laser induced defects and the requisite strategies for their removal and surface polishing. Impressive progress has been made with, for example, a 3-4 order of magnitude improvement in defect reduction in the past 10 years. LLNL is close to a breakthrough in the fundamental understanding of extrinsic laser induced damage in glass. These breakthroughs would not have been possible without LDRD funding.
        2. Transformation Materials Initiative. This work demonstrated the synergistic integration of critical experiments and mechanism-revealing multi-scale modeling and simulation to achieve a new level of scientific understanding and technological innovation underpinning SSP. The DRC noted that the LLNL researchers underscored the importance of LDRD support as an investment by the Laboratory. In the long run, such capabilities will help connect SSP science with energy science. This work is outstanding.
        3. Fabrication of Advanced Materials and their Characterization. The LDRD work involves an excellent mix of simulation at the meso-scale and experiment, together with creative approaches to material fabrication. Addressing this will be an important part of ensuring confidence in the ability of the weapons community to understand the operation of the stockpile.

Notes

(1) The loss of the Laboratory Science and Technology office as an "institutional" office is a loss to the Livermore Site Office because they addressed many broad issues and responded or integrated responses from across many different program directorates at LLNL. Many of the issues are broader than just LDRD and the S&T assessment. This office has been the central POC in many areas (LDRD, WFO, Industrial Partnering and Commercialization, DHS crosscutting issues) of the laboratory. LSTO has assisted in resolving disputes and coordination of WFO and LDRD Annual Program Reviews with NNSA Headquarters and LSO staff.

(2) A major issue at hand at LLNL is in Biology and Biotechnology which continues to struggle in balancing cutting-edge basic life science and biosecurity. This is still a work in progress at LLNL. LSO agrees with the DRC that further definition of a biosecurity strategic plan is needed at LLNL. LLNL needs to define a sets of goals that LLNL can accomplish being mindful of their support to the DHS mission. LSO noted during the DRC review that the work was disparate rather than a comprehensive strategy between life sciences and biosecurity at LLNL. This is the second time; we have raised this concern in Appendix F Assessments and request that the new industry team address this issue in the FY 2008 as an area that requires improvement for LLNL as well as the DRC comments on the Life science projects funded by LDRD.

Performance Measure 5.3	Outstanding
Execute non-NNSA sponsored projects and programs that utilize the Laboratory's unique expertise, capabilities, and facilities in a manner that enhances the Laboratory's ability to accomplish its current and future national security missions, including those related to homeland security and homeland defense, while meeting the programmatic needs of the non-NNSA sponsors.	

Noteworthy achievements include:

- A multi-national team led by LLNL has been selected by NASA to build the next generation extreme adaptive optics coronagraph for the Gemini Observatory. Some of the participants are: NSF Center for Adaptive Optics at UC Santa Cruz, UC Berkeley, UCLA.
- An LDRD-funded project is developing analytical capabilities in support of NASA's Stardust Mission. (Over 200 academic institutions are participating in analyzing Stardust samples). LLNL authors were on seven of the articles in the special issue of *Science*.
- NCI-funded project created the first of synthetic high affinity ligands that bind selectively with high affinity to non-Hodgkin's lymphoma cells. Results from this joint collaboration with LLNL and UC Davis were published in *Clinical Cancer Research.*
- LLNL developed, evaluated and delivered for testing a point-of-care multiplexed assay (FluID system) for detection of influenza and other high priority pathogens in support of the National Institutes of Health.
- DOE Office of Science-sponsored Program for Climate Model Diagnosis and Intercomparison (PCMDI) houses the world's most complete collection of global climate

model data. PCMDI reached a milestone of registering more than 1,000 people to use the data.

- During May, 2007, The Nonproliferation, Homeland and International Security (NHI) DRC was briefed on infrastructure protection and force protection (IP) programs within the IP division. This involves performing a wide variety of applied research and development, including hardware development, testing and evaluation, software development for information exploitation, analytic tools for weapon-targeted interactions, and operational support for a broad range of applications in force and infrastructure protection modeling, simulation, and counterproliferation analysis. Most of the NHI IP involves work for others with the majority of the funding coming from organizations other than NNSA. The NHI DRC considered the IP division's science and engineering as Outstanding. Examples are:

    1. Work associated with the Department of Homeland Security funded Countermeasures Test Bed program which is to evaluate, develop, and validate threat countermeasures for the protection of critical infrastructure. Perform independent evaluations of threat detection equipment and associated concepts of operations in specific settings and environments (i.e. air cargo explosives detection and transportation security).
    2. The Homeland Operational Planning System (HOPS) is a web accessible system that provides situational awareness and risk management information and tools for critical infrastructure that may be affected due to a terrorist attack or natural disasters. Using HOPS, analysts can conduct detailed engineering assessments of key facilities to identify critical structures, components, assess various attack strategies and evaluate the effectiveness of measures to protect critical elements. HOPS is funded by the National Guard under the Work for Others Program.
    3. Mass transit agencies face significant challenges in securing systems from terrorism. LLNL is working with DHS and mass transit agencies to fully characterize and mitigate transit system vulnerabilities.
    4. LLNL has developed Advanced Conflict and Tactical Simulation (ACATS) which is a program using simulated based technologies to train emergency response managers at local, state, and federal levels. It includes exercises, performance capture, exercise action on lessons learned and development of an improvement plan to address training gaps.
    5. LLNL's Infrastructure Protection (IP) division is the lead for programs directly supporting Department of Defense work. IP has developed and continues to be the "gold standard" in Joint Conflicts and Tactical Simulation (JCATS). JCATS has been released to DoD and Other federal government users at more than 350 sites worldwide. LLNL has also added the JCATS low-overhead driver (JLOD) which is a simulation supporting both kinetic and non-kinetic effects of military and civilian operations. Today, JLOD is capable of modeling 200,000 entities positioned across the world. It is still in active development.
    6. The Counterproliferation Analysis and Planning System (CAPS) provides operational assessment of a country's weapons production, infrastructure, and capabilities. CAPS have been an important contributor for DoD in support of the Iraq War efforts.

Notes: WFO projects mentioned also apply to PBM #4 as well.

Office of Basic Energy Sciences indicated that the overall performance by LLNL in several materials science and geoscience projects funded by office of science was "good to outstanding" with no deficiencies noted. Support for the Dynamic Transmission Electron microscope program has been increased based on good merit reviews.

Performance Measure 5.4	Outstanding
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.	

Noteworthy achievements include:

- FY 2007 successes in the commercialization of LLNL's technologies include the Adaptable Radiation Area Monitor (ARAM) and the Easy Livermore Inspection Test Explosive (ELITE) technology.
- TomoTherapy, Inc. executed a licensing agreement and CRADA with LLNL for the Dielectric Wall Accelerator (DWA). (Note: LDRD investment in the early development of the DWA).
- Cepheid, a long time licensee of LLNL has made significant advancements on products based on LLNL technology.
- LLNL success in establishing a Cooperative Agreement with Chevron for oil reservoir monitoring and management.
- Lilliputian Systems, Inc., a LLNL licensee distinguished as 2007 Technology Pioneer
- Green Volts won Clean Tech Open renewable energy prize
- Xceleron, Inc. announced investment to create first pharmaceutical testing facility.
- Microfluidic Systems, Inc. on BAND awarded a Phase III continuation contract by DHS.
- ORTEC, LLNL Licensee on radiation detectors awarded a contract by DHS.
- The Office of Basic Energy Sciences indicated that the overall performance of LLNL has been "outstanding". LLNL has provided technical input and supported the technical panel leadership in recently Office of Science sponsored workshops. LLNL also provided physics leadership in the American Physical Society Workshop during May. This workshop was co-sponsored by the National Science Foundation and Office of Science.
- The Office of Science indicated that LLNL did an "excellent job in developing various subcomponents for the DOE Artificial Retina Project. LLNL accomplished major goals in completing the design and construction of the 240 microelectrode array and the retina tack used to attach the array to the retina."
- LLNL has an effective compliance program regarding the collection of royalties on LLNL-developed technology that has been licensed by private industry. From October 1, 2006 through June 15, 2007, LLNL has collected $5.2 million in royalty revenue. LLNL executed 84 patent and copyright licenses and option agreements.

- LLNL has executed three new CRADAs, and six amendments in FY 2007. There are currently 23 active CRADAs.
- There were 116 inventions reported, 117 U. S. patent applications and 21 initial foreign patent applications were filed through June 15, 2007. A total of 50 U. S. patents and 5 foreign patents have been issued to date in FY 07 Laboratory inventions.

Performance Objective 6	Good
Optimize current and evolving mission performance by providing effective and efficient facilities and infrastructure.	

Performance Measure 6.1	Outstanding
Operate mission essential and user facilities as national capabilities, including National Ignition Facility, Device Assembly Facility, Superblock, Site 300, and High Performance ASC Computers.	

LLNL has provided an outstanding level of support in performing the Objective 6.1 that included Device Assembly Facility (DAF) and Test Readiness at NTS, Site 300, and High Performance ASC Computers.

DAF, LLNL and LANL collaboration continued under the auspices of the Joint NTS Program Office (JNPO) in activating DAF for its new, enhanced role, establishing operation protocols, accommodating the LANL TA-18 Early Move, and reestablishing the LANL Criticality Experiment Facility (CEF) at DAF. The milestones were met or are on track.

Test Readiness activities progressed under the FY03 integrated program plan, managed by NNSA/HQ. Test Scenarios and Capability Assessment and other LLNL milestones were also met or are on track. LLNL continued to make strong emphasis for new diagnostics and on developing early-to-mid-career personnel with test-specific skills.

Site 300. The radiographic hydrotest facilities at LLNL (FXR) and at LANL (DARHT, LANSCE/pRad) continue to be operated as a joint virtual single facility in support of the SSP under the aegis of the National Hydrotest Plan. In FY07, the 5 hydrotests (3 LLNL and 2 LANL hydrotests) are either completed or on track.

Superblock. In view of the uncertainties in the implementation of Complex 2030, including the potential transfer of programmatic Pu activities to LANL's CMR-R, and of "excess material" to Savannah River in the 2014 time frame, the Laboratory conducted approximately 10 qualification experiments in support of the LLNL W88 Production Program.

Phoenix, is an explosive pulsed-power magnetic flux compressor of novel design, whose goal is to provide very accurate equation of state (EOS) and strength data across important regions of weapons performance. LLNL appears to be on schedule to yield vital data by 2012-13.

High Performance ASC Computers, The LLNL, LANL and SNL High Performance Computing (HPC) facilities are critical to the Stockpile Stewardship Program (SSP). The BlueGene/L continues to be the world's fastest computer. Purple excels as a user facility, with a national users program committee allocating the heavily sought after capability computing time.

ICF and NIF
The Contractor did an outstanding job preparing for the operation of ICF mission essential and user facilities (including NIF) over the FY 2007 performance period.

The National Ignition Campaign continues to make excellent progress meeting all milestones and technical objectives on or ahead of schedule. Due to the implementation of a Continuing Resolution in FY2007, the NIC developed the minimum set of funding requirements through the first quarter necessary to maintain the Department of Energy (DOE) Level 0-2 milestone schedule.

Major Cryogenic Target Systems (I.4.2), Target Diagnostics & Experimental Systems (I.5), and other Experimental Support Technology, including User Optics (I.6), and Personnel and Environmental Protection Systems (I.7) accomplishments for the FY 2007 performance period (10/01/06-06/30/07) included:

LLNL was the lead for:

- Completed the Target Alignment System (TAS) Final Design Review
- Completed ten polarization rotator (PR) crystals, bringing the total to over one cluster's worth of PRs delivered
- Began coating of first set of DDSs
- Began final laser cladding glass melt
- Awarded production CPP imprinting contract and began CPP imprinting **[Level 2 milestone/MRT #2323]**
- Completed the Chamber Internal Viewing System (CIVS) installation at all seven stations on the NIF target chamber
- Completed the Preliminary Design Review for the Tritium Stack Monitoring system

LLNL was a participant for:

- Completed final assembly of the second Static X-ray Imager (SXI-2) diagnostic
- Completed the Final Design Review (FDR) of the Ignition Target Inserter Cryostat (I-TIC)
- Approved Integrated Test Facility for beneficial occupancy
- Completed Final Design Review (FDR) for the Load, Layer, and Characterization System (LLCS) subsystem

Outstanding: NCTS/NNDP/EST

Overall: 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.

- review committees and peer review indicate the contractor made excellent technical progress towards enabling experimental campaigns which will contribute to ignition and PCF – Yes, based on FY07 Directorate Review Committee January 30-31, 2007 review of the NIF Directorate, and peer review of laser performance prior to issuance of "NIF Laser Performance Status" article published in Applied Optics in June 2007
- publication record and awards are consistent with highest quality, leading edge, effort – Yes, e.g. R&D 100 award received for "Continuous Phase Plate Optics Manufactured Using Magnetorheological Finishing", "National Ignition Facility Laser Performance Status" published in Applied Optics in June 2007

- demonstrated development of new capabilities with direct relevance to mission – Yes, e.g. increased Disposable Debris Shield (DDS) transmitted wavefront yield from 12% to 100% by increasing the minimum material removal requirement, demonstrated one week of continuous Ignition Target Inserter Cryostat (I-TIC) cryogenic system operation and maintained ±1-mK temperature stability while continuously cycling the cryocooler on and off as required for x-ray imaging

Against Milestones: Work exceeds negotiated customer expectations in most areas (for work under change control, completed ahead of schedule).

LLNL FY07 DOE/NNSA Reportable NCTS/NNDP/EST milestone (see milestone table below) completion performance meets the "Outstanding" criteria in Table 1 "ICF & NIF Milestone Performance Evaluation Criteria," unless impacted by things beyond the contractor's control (e.g. budget reductions) – Yes, for the 9-months (Oct'06-Jun'07) all 10 planned DOE/NNSA Reportable NCTS/NNDP/EST milestones (1 Level 2 & 9 Level 3) were completed on or ahead of schedule; in addition one Level 3 milestone due after Jun'07 was completed ahead of schedule. One milestone "Complete Gated-SXI Diagnostic Conceptual Design Review" due 04/30/07 was deleted by a BSCR after a requirements review.

The following additional activities are accomplished:
- clear identification of LLNL FY07 work packages essential to NCTS, NNDP, EST (User Optics, PEPS) – Yes, work packages are the jobs that make up the CAPs, including EVA milestones and completion criteria

Need for Improvement: Performance in all areas is at least at a high Level

- review committees and peer review do not identify any substantive management performance weaknesses affecting the NCTS/NNDP/EST – Yes, based on FY07 Directorate Review Committee January 30-31, 2007 review of the NIF Directorate, and peer review of laser performance prior to issuance of "NIF Laser Performance Status" article published in Applied Optics in June 2007
- there are no surprises - Yes
- responds to DOE/NNSA requests for information/planning exercises with a quality product in a timely manner – Yes, including FY08 budget exercises, and re-planning due to the FY07 continuing resolution

Sustainability: Work is performed in a manner that strengthens the institution, builds core competencies, and contributes to its longer-term vigor.

- review committees and peer review acknowledge that LLNL NCTS/NNDP/EST activities are performed in a manner that often leads the way for the institution, showing significant innovation and forward looking planning consistent with the long-term interests of the institution – Yes, based on FY07 Directorate Review Committee January 30-31, 2007 review of the NIF Directorate, and peer review of laser performance prior to issuance of "NIF Laser Performance Status" article published in Applied Optics in June 2007

Evaluation/Improvement Process: A fact-based systematic evaluation and improvement process is in place and implemented for most areas.

- review committees, peer review, and self assessment processes are in place and operating; findings and recommendations are shared with NNSA and are tracked through closure – Yes, based on FY07 Directorate Review Committee January 30-31, 2007 review of the NIF Directorate, and peer review of laser performance prior to issuance of "NIF Laser Performance Status" article published in Applied Optics in June 2007

Notes

FY08 – FY11 NIC funding needs to be provided in accordance with the approved NIC plan, to achieve the Level 1 milestone "Begin first integrated ignition experiments" by December 2010.

Performance Measure 6.2	Outstanding
Reduce the site footprint (non-process contaminated facilities) consistent with NNSA approved Complex 2030 infrastructure plans, which may include the transition of DP programmatic work from Site 300.	

LLNL's effort in reducing the site footprint was outstanding. The main accomplishment was the successful completion of the FIRP B431 Demolition Project. The project endured a six month delay due to safety issues at the project's mid-point causing the rebaselining of the Total Estimated Cost (TEC) and schedule. The project received Critical Decision-4, project complete, within the rebaselined schedule and within the original TEC. The excess funds will be redistributed to other FIRP Disposition projects. The total area reduced by this project is over 95,000 gross square feet (GSF). LLNL also continues to prepare the disposition of other facilities scheduled to be demolished late in FY07 or in FY08. The total amount of footprint reduction for this fiscal year (through June 2007) for NNSA facilities is just over 125,000 GSF.

LLNL also provided support for an Independent Progress Review (IPR) review for a Facility Disposition project at another sister site, a high priority expense funded disposition Line-Item. The expertise and insights were invaluable in supporting the recommended path forward for this very important NNSA project. It will contribute to the overall reduction of the DOE footprint.

Performance Measure 6.3	Good
Execute construction projects as identified and agreed between NNSA and the Laboratories within scope, schedule, and budget.	

In overall project performance (excludes NIF project), the M & O Contractor has done a good job in managing and executing scope, schedule and cost on all authorized projects and on line item projects in FY 2007.

Performance Targets: Line Item Projects
Overall Performance: Good
Performance against Milestones: Good
Need for Improvement: Good

Evaluation/Improvement Process: N/A

Currently there are two line item projects at LLNL; Engineering Technology Complex Upgrade (ETCU) and the Tritium Facility Modernization (TFM). The ETCU project is now complete, meeting CD-4 milestone schedule and project budget. The TFM project is @ 40% complete (as of June '07 earned value data) and is on schedule and within the cost baselines. The Conventional Facility Construction and Special Facility Equipment milestones continues to progress according to schedule.

FY 2007 Annual Assessment- Appendix F

The following performance targets were measured per the approved Assessment Management Plan FY 2007 approved December 2006:

- **Milestone achievement and approved baseline schedules (based on FY 2007 work scope performed) Rating: Good**
- Both ETCU and TFM projects met the **base performance rating** by achieving the FY2007 milestones on schedule. ETCU completed CD-4 on March 2007 as planned. TFM construction baseline milestone was scheduled for Feb 2007 but commenced slightly ahead of schedule in Jan 2007.

- **Cumulative Cost Performance Index - Rating Good:**
- Both ETCU and TFM projects met the **base performance rating**. ETCU EV performance average was (10/06-5/07); CPI – 1.01 and SPI -1.00 and TFM EV performance average was(10/06-5/07); CPI –0.99 and SPI -1.14

- **Project Baseline Change Control – Rating: Good**
- Both ETCU and TFM projects met the **base performance rating.** ETCU had no changes to TEC/TPC and no level 1 changes to scope or schedule. TFM had no non-directed changes to TEC/TPC or level 1 changes to scope or schedule.

- **Safety in Design Integration: - Rating: N/A**
- Both projects had initial formal safety documentation and in FY2007 there were no additional requirements.

- **Supports Project Management Programs- Systems: - Rating: Outstanding**
  Both projects have continuously supported the monthly and quarterly reporting requirements in a timely manner. Earned value reporting is consistently applied in management and reporting of these projects. Additionally, LLNL is serving as lead EFCOG members to support development on the DOE 413.3 guides for earned value management, lesson learned, and performance baselines, which meets the **stretch performance criteria rating**.

- **Supports Project Management Programs- Professional Development–**
- **Rating: Outstanding**

The M & O meets the **performance target and base performance of this rating criterion.** They have actively pursued professional training and eleven of the PM staff has obtained PMP certification, and one Associated Value Specialist Certification in Value Engineering. They have staff pursing certification as Earned Value Professionals and continue to encourage the remaining staff to pursue project management certification.

- **Purchase Order Request Contract Estimates Rating- n/a**
  Construction effort for both line item projects used labor only effort.

FY 2007 Annual Assessment- Appendix F

Performance Targets: All Projects (GPP, IGPP & OFP):
Overall Performance: Good
Performance against Milestones: Good
Need for Improvement: Good
Evaluation/Improvement Process: N/A

In FY 2007 $32.3 M has been authorized. The overall performance of all projects (GPP, IGPP, and OFP) that have been authorized in FY2007 has been good. All projects report to meeting baseline approved scope, schedule and cost. The FY 2007 authorized projects are:

FY 2007 Authorized Projects

IGPP	TEC $M	GPP	TEC $M	OPERATING	TEC $M	
B 112	$4.95	B271	$1.25	B253	$2.10	
B 511	$4.95	B332	$3.15	B391	$1.19	
E9	$3.18			B439	$0.92	
Western	$2.20			B805	$0.58	
				B141	$4.90	
				outer loop	$2.90	
Subtotal	**$15.28**		**$4.40**		**$12.59**	**$32.27**

The following performance targets were measured per the approved Assessment Management Plan FY 2007 approved December 2006:

- **Milestone achievement and approved baseline schedules (based on FY 2007 work scope performed) Rating: Good**
- All projects are meeting baseline milestones and rating.

- **Cumulative Cost Performance Index - Rating n/a:**

- **Project Baseline Change Control – Rating: Good**
- The projects are executing and complying with the change control at the level 2 and 3 Consistent with the approved Project execution plans. Several of the projects after receiving bids have had to rebase line with level 2 BCP for increase of TEC.

- **Safety in Design Integration: - Rating: Good**
- All require initial formal safety documentation and all projects have been compliant in Meeting appropriate level of safety documentation. Review of safety plans, IWS, PWS, and NEPA have been adequately submitted.

FY 2007 Annual Assessment- Appendix F

- **Supports Project Management Programs- Systems: - Rating: Outstanding**
  LLNL is serving as lead EFCOG members to support development on the DOE 413.3 guides for earned value management, lesson learned, and performance baselines, which meets the **stretch performance criteria rating**.

- **Supports Project Management Programs- Professional Development–**
- **Rating: Outstanding**
  The M & O meets the **performance target and base performance of this rating criterion.** They have actively pursued professional training and eleven of the PM staff has obtained PMP certification, and one Associated Value Specialist Certification in Value Engineering. They have staff pursing certification as Earned Value Professionals and continue to encourage the remaining staff to pursue project management certification.

- **Purchase Order Request Contract Estimates Rating-Satisfactory**
- The representative government estimates of several projects have been experiencing bid busts due to an estimate differential range of +15% to 54%. In order to proceed with the project Level 2 BCP's have been required for increase in TEC to cover the increase of not just the project but the increase of MPC and associated costs. There needs to be improvement in the element of bid cost estimates and overall performance of estimates.

Notes

With line item construction jobs diminishing the primary work is with small projects. Much more attention to small project authorization, execution, and solid cost estimates for competitive bids will be required.

Performance Measure 6.4	Outstanding
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. • Conduct maintenance activities in accordance with the NNSA-approved Maintenance Implementation Plan (MIP). • Maintain 2%+ maintenance funding relative to Real Property Value for FY 2007.	

Overall, the Contractor did an outstanding job on the facilities and infrastructure management program encompassing TYSP, FIRP, and stewardship of LLNL facilities and infrastructure implementation activities.

- **Facility Condition Index (FCI):** LLNL's current Facility Condition Index (FCI) for Mission Critical (MC) facilities is less than 3% and FCI for Mission Dependent - Not Critical (MD-NC) facilities is approximately 7%. The rating is considered outstanding because LLNL has exceeded/met RTBF's FY2013 FCI strategic performance goal for both mission critical categories. RTBF's FY2013 MC FCI performance goal is 5% and FY2013 MD-NC FCI is 7%. In summary, LLNL has achieved RTBF's performance goal for FCI approximately 6 years ahead of the scheduled milestone.

- **FIRP Execution**

  a. Costing – As of June 2007, LLNL has costed approximately $13.8M. LLNL is approximately $2M ahead of their baseline schedule for costed resources and are ahead of schedule to cost $17.7M of the $30.5M available by the end of the FY07.
  b. Recapitalization – Several projects throughout the FY were yellow or red due to cost or schedule issues. However, as of June 2007, all 16 active projects are green. LLNL continues to address all issues and discuss them with the appropriate LSO FPD.
  c. Disposition –

    i. Building 431 – Project completed under the approved baseline budget. The project did require adjustments to the baseline schedule but was completed within the Acquisition Executive authority (within six months of the original baseline) and did not require involvement/visibility by the Deputy Secretary of Energy.
    ii. Building 212 – Project has experienced some difficulties with tritium contamination greater than planned/characterized. Project scope had to be reduced to insure costs were not going to exceed $5M. Project is still on schedule to complete by the end of FY2008.
    iii. All other projects are being completed on time and within the approved schedule.
    iv. Special Note – The Site provided support for an IPR review for a Facility Disposition project at another sister site. Specifically, Mike Auble provided

excellent Technical support for a high priority expense funded disposition LI. Mr. Auble provided technically sound project deconstruction options that were used to enhance the cost estimate. Mr. Auble's expertise and insights were invaluable in supporting the recommended path forward for this very important NNSA project.

d. Execution – LLNL has successfully transitioned to the NA-52 required BARTT System for reporting and tracking FIRP projects.

- **Ten Year Site Plan (TYSP):** LLNL's TYSP continues to be used as the model for how to develop an excellent TYSP. The site has consistently developed a TYSP that is complete and compliant with Headquarters guidance.

- **RTBF:** All reporting requirement to HQ have been submitted on a timely basis including the PART/JOULE performance reports and the Site Execution Plan. LLNL successfully conducted and presented the Annual Program Review via teleconference. Monthly meetings and conference calls with LLNL, LSO and HQ continue.

  LLNL also completed the revision of the Mission Dependent/Not Critical list based on the revised definition. This matches with last year's effort to identify Mission Critical facilities. Later this year, candidate projects for Institutional Site Support funding will be submitted by LLNL. This will give LLNL the opportunity to have institutional activities (beyond FIRP) to be funded in support of the Complex 2030 goals.

- Implement FY07 MIP
  Outstanding
  Implementation of the MIP at LLNL was outstanding over the past year with essentially 100% accomplishment of maintenance work on a cost and task basis as well as no shutdowns during year due to maintenance failures.

- Maintain maintenance funding relative to Real Property Value;
  Outstanding
  Implementation of maintenance funding relative to actual vs. planned funding included substantial additional funding beyond initial budget allocations to ensure maintenance of mission critical and mission dependent facilities. Ratio of actual vs. planned funding far exceeded initial budget estimates to improve real property values for FY 07 and continue backlog reductions via maintenance reinvestment programs.

Notes

Funding reductions will significantly affect the successful execution of the RTBF Program.

Performance Measure 6.5	Good
Support planning, implementation, and execution of special nuclear material (SNM) consolidation and/or relocation activities, including reducing inventories of surplus and excess SNM consistent with DOE/NNSA approved plans.	

Consolidating material is one of NNSA's main goals to transform the Cold War-era nuclear weapons complex to an even more secure, more efficient and more modern entity. Lawrence Livermore National Laboratory began reducing the inventory of special nuclear material (plutonium and highly enriched uranium) at the Livermore, CA site. LLNL is taking concrete steps to reduce significant quantities of nuclear weapons materials. The first shipment of material out of Livermore was recently completed in full compliance with existing safety and environmental authorizations.

Performance Measure 6.6	Satisfactory
Demonstrate progress towards achieving the energy efficiency goals and requirements of the Energy Policy Act of 2005 (EPACT 2005).	

The overall rating is Satisfactory is based upon the Contractor's performance in two of the four areas related to demonstrating progress towards achieving energy efficiency goals and requirements of the Energy Policy Act of 2005 as follows:

- Contractor performance related to making progress on the EPACT 2005 annual energy reduction goal of 2% (or 4% less than 2003) is **unsatisfactory**. Many of the larger facilities increased electric power use during FY2007 specifically 219 buildings representing 53% of total building area showed an average increase of 8.9% for the first 3 quarters of FY 2007 compared to the first 3 quarters of FY 2006. The overall energy reduction that LLNL is projecting to achieve is 1.79% less than 2003 including all present and planned building exclusions.
- Contractor performance related to supporting DOE/NNSA's Energy Savings Performance Contract (ESPC) effort with Johnson Controls is **satisfactory**. Laboratory management has finally recognized that the Site Energy Manager can not support the ESPC project alone and be expected to carry out the remaining responsibilities of a Site Energy Manager. Additional Plant Engineering resources have been devoted to the ESPC project effort (June and July 2007) to enable the Site Energy Manager to perform other energy management responsibilities such as energy and water conservation awareness, and submitting smaller energy and water projects for institutional funding etc. The Contractor is relying solely on the ESPC project to achieve the EPACT 2005 goals and construction is not scheduled to begin until well into FY 2008.
- Contractor performance related to completing other energy management initiatives as outlined in the FY 2007 Comprehensive Energy Management Plan is **unsatisfactory**. Contractor management needs to devote additional resources and attention to energy and water conservation to carry out the commitments of the LLNL Comprehensive Energy Management Plan (CEMP) and a 10% voluntary water use reduction request from the San Francisco Public Utilities Commission (April 2007). Although a majority of the actions in Exhibit A of the CEMP were completed by the LLNL Energy Management

Program, there is still evidence that contractor management is not accountable or devoting the resources to implementation of energy efficiency projects and conservation techniques identified in the CEMP (e.g. Exhibits P-1 and P-2). One example is ensuring that the LLNL Directorate Electric Power Scorecard application is actually used by the Directorates and facility management for monitoring energy use. In addition, energy conservation is not being practiced by facility management in some vacant buildings with lighting and HVAC left on 24/7 (e.g. B312).

- Contractor performance is **satisfactory** related to completing the LLNL Electric Metering Plan due to LSO July 20, 2007. A Draft LLNL Electric Metering Plan was submitted in February 2006 prior to DOE completing final electric metering guidance in September 2006. LSO transmitted comments on the Draft LLNL Electric Metering Plan to LLNL in April 2007 with a revision requested to be complete July 20, 2007. The final, approved, LLNL Electric Metering Plan was received in FY07.

Notes

LSO is concerned that LLNL is relying so heavily on the ESPC effort related to achieving EPACT 2005 goals and more aggressive energy reduction and water conservation goals of Executive Order 13423. Installation of energy conservation measures under the ESPC is not scheduled to begin until well into FY 2008 which may result in little progress being made towards the energy reduction goals until 2009.

Operations

Performance Objective 7	Satisfactory
Maintain safe and environmentally sound operations in an efficient and effective manner in support of mission objectives.	

Performance Measure 7.1	Satisfactory
Achieve continuous improvement in Integrated Safety Management System performance: • Assure consistent and effective application of ISM principles across all organization levels and across all Laboratory facilities. • Ensure effective implementation of an ES&H corrective action management program, including institutional corrective actions derived from violations enforceable under the Price Anderson Amendments Act. Implement 10 CFR 851 (DOE Worker Safety Rule) across the institution by February 27, 2007, as described in the LSO-approved LLNL program description.	

Safety Management Programs

7.1.1 – For FY07, the contractor institutional safety management programs were evaluated through Integrated Safety Management System (ISMS) guiding principles and core functions. NNSA evaluated the following contractor programs – Industrial Hygiene (general), Chronic Beryllium Disease Prevention Program, Laser Safety, Ergonomics, Electrical Safety, Illness and Injury, Fire Protection, Biological Safety, Occurrence Reporting and Processing System (ORPS), and Occupational Radiation Protection. Additionally, two specific aspects of ISMS were evaluated – Work Control/Planning and Feedback/Improvement. NNSA rated two ISMS categories as unsatisfactory. Guiding Principle 2 – *Clear Roles and Responsibility* and Core Function 5 – *Feedback and Continuous Improvement* are the two areas rated unsatisfactory. The Ergonomics Program and the Laser Safety Program rated "Good" or "Outstanding" in all evaluated ISMS categories. As identified in the mid year review, the contractor continues to exhibit weaknesses with quality of self assessments. Biological Safety and the Occupational Radiation Protection program rated unsatisfactory in more than two areas of ISMS.

Corrective Action Management Program and PAAA

7.1.2 - Product timeliness has improved this fiscal year. However, quality and timeliness continue to be a problem. In response to the Type B Fall from Ladder Accident Investigation, the contractor Corrective Action Plan has progressed through numerous iterations and has taken over 8 months from the issuance of the Accident Report to complete. It is currently not approved. Final reports in ORPS that include corrective actions are late 42% of the time with an average of 65 days overdue. This is an improvement from FY06 when ORPS reports were late 71% of the time with an average of 182 days overdue. The improvement is noteworthy, but does not meet NNSA expectations for performance. Attempts by NNSA to verify completion of contractor corrective actions was not possible due to incomplete or poor quality evidence packages. As described in the midyear evaluation, the contractor continues to improve its implementation of PAAA.

10 CFR 851 Implementation

7.1.3 – The contractor submitted the 10 CFR 851 Worker Safety and Health Program (WSHP) on schedule and met requirements. However, during the development process, the contractor did not adequately plan the activities needed to prepare and submit the WSHP to LSO. Both contractor and LSO senior management were involved to help resolve these planning issues. These issues included (1) 10

CFR 851 requirement flow down to sub-contractors, (2) submittal of sub-contractors' WSHPs, and (3) Occupational Medicine applicability to sub-contractors.

Notes

- Poor timeliness and quality of contractor corrective actions including deliverables and evidence packages
- Incomplete adherence to ISMS within Biological Safety and the Occupational Radiation Protection program
- Unclear roles and responsibilities throughout the institutional safety management programs
- Ineffective implementation of feedback and improvement processes throughout the institutional safety management programs

Performance Measure 7.2	Satisfactory
Improve the following programs within the criteria identified: • The contractor's institutional systems engineering program within the NNSA-approved schedules. • An Emergency Management Program within the NNSA-approved schedules in the Emergency Readiness Assurance Plan (ERAP). • The relevant configuration management program tasks identified for implementation this year. • The Conduct of Operations Program by developing and implementing the applicability matrices within the NNSA-approved schedules.	

The contractor did a **satisfactory** job improving the Institutional Contractor System Engineer, the Emergency Management, the Configuration Management, and the Conduct of Operations Programs.

The contractor's institutional systems engineering program within the NNSA-approved schedules.

The laboratory performed a satisfactory job in drafting Cognizant System Engineer (CSE) procedures and drafting / issuing System Description Documents. In addition, the Laboratory has satisfactorily addressed issues / findings jointly identified by the CSE and LSO Safety System Oversight personnel; thereby, meeting the agreed upon periodic assessment goals as stated within the LLNL System Engineer Program (ESH-IV.41-001, Rev. O) procedure.

An Emergency Management Program within the NNSA-approved schedules in the Emergency Readiness Assurance Plan (ERAP).

The contractor did a good job of implementing an Emergency Management (EM) Program within NNSA-approved schedules according to performance year deliverables stipulated in the LSO-approved Emergency Readiness Assurance Plan (ERAP). The contractor completed all fiscal year 2007 ERAP deliverables to date, including, but not limited to: annual updates to the LLNL Emergency Plan, Emergency Plan Implementing Procedures, Hazards Survey, and Emergency Planning Zone; Emergency Preparedness Hazards Assessment (EPHA) documents; EPHA drills; annual exercise; and the annual self-assessment. All ERAP deliverables were of

acceptable quality. This included the completion and implementation of all scheduled corrective actions to date from the June 2005 Office of Independent Oversight and Performance Assurance emergency management inspection that were due in the performance year to achieve short-term and ensure longer-term systematic changes. The contractor also completed all deliverables to date per a mutually agreeable Implementation Schedule for DOE Order 151.1C, Comprehensive Emergency Management Program. The Implementation Schedule is documented in the 2007 ERAP and provides the contractor's approach to achieve compliance with the newly issued Order, and meets the NNSA HQ Performance Target regarding adherence to and planned compliance with DOE Order 151.1C.

The contractor undertook a new initiative in the performance year to develop a Site-Wide Chemical EPHA, which included the assessment of 21 chemicals. The Site-Wide Chemical EPHA is an innovative way to group onsite facilities that will require the same response efforts into a single EPHA document, and should reduce the overall number of facility-specific EPHAs necessitated by chemical hazards.

The relevant configuration management program tasks identified for implementation this year.

Lawrence Livermore National Laboratory (LLNL) performed satisfactorily in its implementation of configuration management. LLNL provided clearer expectations and assigned a seasoned configuration manager to aid the directorates and division with their execution of the requirements. Progress in configuration management implementation is notably seen in the following directorates: Safety and Environmental Programs (specifically Radioactive and Hazardous Waste Management division), Nonproliferation, Homeland, and International Security (NHI), and Chemistry and Materials Life Sciences (CMLS). LLNL has successfully leveraged the implementation of configuration management off of the completion of the non-nuclear safety basis documents which is the initiator for identification of configuration items. NMTP has begun several of its implementation milestones which include: drafting of System Design Descriptions, development of 'as-built' drawings, use of Enterprise Configuration Management System (ECMS) for document control, and continued integration with the system engineering program. However, NMTP has not made sufficient progress on the activities associated with the CM Schedule including SDDs, MEL, NMTP CM Plan, Work Control Manual and process and procedures for operating procedures. These activities show as past due and there has been little to no progress made on several of them. Recently, NMTP reported that they decoupled the CM schedule from the DSA Implementation Plan which was originally integrated to ensure the system engineering resources were being efficiently and effectively used. Due to continued lack of forward progress based on the activities associated with the NMTP CM Schedule, LSO concludes that CM is marginally acceptable within NMTP however it is satisfactory for the rest of LLNL

The Conduct of Operations Program by developing and implementing the applicability matrices within the NNSA-approved schedules.

The contractor did a satisfactory job of implementing a Conduct of Operations program within the schedule specified in the LSO-approved final Corrective Action Plan (CAP) to the 2006 LSO Management Self-Assessment and CDNS biennial review. The contractor completed a number of fiscal year 2007 CAP deliverables including: preparing the revision to the LLNL ES&H Manual Document 3.5, completing the Unreviewed Safety Question (USQ) process for Document 3.5, and evaluating accountability for implementing Conduct of Operations. These deliverables were of acceptable quality. While progress has been made, not all CAP deliverables were completed. Deliverables not completed include assessments and training corrective actions.

Notes

Contractor's System Engineer Program – The HSS-64 Inspection of the LLNL NMTP System Engineer Program acknowledged that the B332 system engineer program is new and is in the process of being fully implemented. HSS-64 recognized concerns that had previously been identified by LSO and LLNL is addressing. In particular, NMTP is having difficulty filling system engineer positions and the training program requires further definition.

Emergency Management Program – The LLNL Emergency Programs Organization (EPO) will experience at least a 25% reduction in staff by July 2007 (e.g., 3 full-time equivalents) due to retirements. This could have a negative influence on the overall efficiency of the institutional emergency preparedness program, namely in the areas of drills and exercises and consequence assessment. The contractor is examining its skills mix and how to mitigate staff attrition.

Configuration Management Program - LLNL has not performed a self assessment of the configuration management program in many of the Directorates. This is a critical element of the program to allow LLNL to self identify any known deficiencies in implementation or correct weaknesses.

The Assessment Management Plan for 2007 identified the following metric:

- 'LLNL will continue to implement Configuration Management in facilities within 60 days of approval of non-nuclear safety basis documents."

In LSO reviews, there was a lack of evidence that this metric was being met. LLNL must ensure that once a safety basis document is approved, configuration management is applied immediately.

Performance Measure 7.3	Satisfactory
Comply with and achieve continuous improvement in nuclear safety and quality performance under 10 CFR 830 for both LLNL and LLNL operations at the Nevada Test Site. • Implement the Building 332 Documented Safety Analyses and Technical Safety Requirements within the NNSA-approved schedules and continue to reduce the number of technical safety requirement violations through continuous improvement in facility operations. • Implement and maintain a criticality safety program that meets the requirements of DOE Work Smart Standards and utilizes quantitative criticality safety metrics. • Implement the Unreviewed Safety Question process site wide within the NNSA-approved schedules.	

Quality Assurance

The contractor meets the operational performance expectations for tasks and deliverables related to **Quality Assurance (QA) and is therefore rated as satisfactory**. The contractor met the majority of deliverables on time with an adequate degree of quality and comprehensiveness. Overall, the contractor is in compliance with QA requirements, although many opportunities for improvement continue to exist. The same opportunities present at the end of FY 2006 are still opportunities at the end of FY 2007. These include accelerating the lengthy implementation of software quality assurance requirements, consistently applying the graded-approach at the Directorate level, and effectively implementing corrective action processes and self-assessment processes.

Throughout FY 2006, the contractor struggled to provide the Livermore Site Office (LSO) with an implementation plan (IP) for implementing the new software quality assurance (SQA) requirements of DOE O 414.1C, which was issued on June 17, 2005. These struggles continued in FY 2007. Although LSO directed the contractor to submit an SQAIP by June 15, 2006, the plan was not submitted until December 7, 2006. Although the contractor had issues with committing to an IP, the contractor continued to work on implementing SQA. The contractor drafted the planned methodology to baseline the safety software used at Lawrence Livermore National Laboratory (LLNL) and submitted it to LSO in November 2006. The contractor is meeting milestone dates established in their SQAIP. One of these milestones was selecting IEEE 1228 as an SQA standard and adding it to the Work Smart Standards. Overall, contractor performance against milestones meets expectations with some documented failures to keep to schedule.

Significant improvements to the contractor's QA program (QAP) were implemented in FY 2007. LLNL published in the ES&H Manual, Revision 5 to the LLNL Quality Assurance Program description document. This revision required LLNL Directorates to update their Directorate-level QAPs, many of which were out of date.

Also, DOE Order 210.2, *DOE Corporate Operating Experience Program* was incorporated into the Work Smart Standards set. Incorporation of these requirements will strengthen the LLNL Lessons Learned program.

Overall quality assurance program "health" meets requirements and continues to improve.

Nuclear Safety

The contractor's performance in nuclear safety was satisfactory. Many of the deficiencies identified by LLNL, LSO, and OA-40 in prior years have been corrected. However, in a recent audit, HS-64 was critical of the contractor for not having adequately addressed all of the previously identified B332 safety system deficiencies. In general, LLNL's self assessment of its performance in nuclear safety has been forthright and critical in identifying problems. Although a positive trend was recognized in this area, further improvements are needed.

Much of the contractor's resources continued to be focused on implementing the B332 DSA/TSRs, and sometimes this appeared to affect timeliness in responding to other nuclear safety issues. In order to maintain the implementation schedule, the contractor has requested and received approval for a one year delay of its 10CFR830 annual DSA/TSR update requirement for B332. In addition, the contractor is in the process of requesting to delay the evaluation of its B332 active confinement ventilation system, a commitment associated with Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-2. The DNFSB has conveyed its willingness to consider a delay in the Recommendation 2004-2 active confinement system evaluation for B332, because it acknowledges that many of the technical resources required to complete the evaluation are the same as those needed to complete the implementation of the B332 DSA/TSRs and because the contractor has already provided to DNFSB substantial information that the evaluation is expected to provide.

Effectiveness of the contractor in implementing the Unreviewed Safety Question (USQ) process has been mixed. Institutionally, the contractor's safety basis group leader and USQ subject matter expert have made a positive impact on improving the quality of the USQ process. The latest version of the contractor's USQ procedure (instituted at the end of fiscal year 2006) is now closely aligned with the DOE guide for USQ implementation and has proven to be of high quality. During this period, the contractor completed training on its new USQ procedure. Toward the end of this evaluation period, the contractor completed an effectiveness review of its USQ process. The effectiveness review concluded that the new procedure and program had been effectively implemented except for USQ determinations performed by its Radioactive and Hazardous Waste Management (RHWM) department. This was evidenced by several USQDs, which failed to meet current requirements. The findings and conclusion of the review were independently verified.

Criticality Safety

The LLNL nuclear criticality safety program is Outstanding.

Two of the criticality safety performance metrics focus on the severity of criticality safety infractions and repeat criticality safety infractions (failure of lessons learned). LLNL had only one criticality safety infraction during the course of the reporting period. This infraction was considered a level 4 infraction – the lowest level type of infraction. The infraction involved the use of a casting mold that had not been authorized and was self-identified by facility material handlers.

There were no repeat infractions during the reporting period.

LLNL has been highly effective in ensuring that the proper personnel receive nuclear criticality safety training. The reported number of required personnel, who had taken HS3100, *Fundamentals of Criticality Safety*, was over 99% at mid-year and LLNL continues to be well above the 95% target during the final quarter of FY07.

LLNL has also been involved in the development and maintenance of national consensus standards related to nuclear criticality safety. This work benefits not only the Laboratory, but organizations anywhere in the nation that work with significant quantities of fissionable material. Four LLNL Criticality Safety Section members participate on ANSI/ANS standards working groups.

LLNL has also completed the Headquarters (NA-17) specified number of hands-on criticality safety training classes in support of the DOE National Criticality Safety Program. This program is the only one of its kind in the nation and provides DOE with a valuable training tool necessary in the qualification of criticality safety engineers around the complex.

LLNL's implementation of criticality safety controls in Building 332 has been excellent as evidenced by LSO observations of fissile material movements, implementation of workstation controls, and criticality accident drill execution.

Notes

Quality Assurance

Assessments of SQA implementation provide an indication of an institutional issue with the flow down and implementation of SQA requirements to the facility and activity levels.

Nuclear Safety

Two predominant concerns were identified in the area of nuclear safety. The majority of the contractor's resources were being spent on implementing the B332 DSA and TSRs. This appeared to affect available resources for other Nuclear Materials Technology Program (NMTP) facilities resulting in slow response to resolving LSO safety basis issues (e.g., slow response to

resolution of review comment records [RCRs] for B331 and B334). In addition the contractor needed a one year extension to complete its 10 CFR830 DSA/TSR annual update for B332 and is in the process of requesting an extension for evaluating its B332 confinement ventilation system, a DNFSB Recommendation 2004-2 commitment.

The second concern relates to inadequate implementation of the USQ program by RHWM with regard to the USQ determination process. RHWM DSAs have not provided a list of equipment important to safety (EITS) that is important for implementing the LLNL USQ Procedure. Several of the deficient USQDs lacked specificity, making it difficult to ascertain the actual changes being evaluated.

Criticality Safety

LLNL did not conduct its scheduled Triennial Review of Criticality Safety. This review normally assures LLNL is meeting requirements that management shall establish a way to monitor and assess the overall effectiveness the nuclear criticality safety program (ANSI/ANS 8.19, *Administrative Practices for Nuclear Criticality Safety*.) The review had been scheduled for the final quarter of the fiscal year but LLNL senior management canceled the review.

LLNL did not complete a FY 2007 formal annual criticality safety review of operations in Building 332, the Plutonium Facility (required under ANSI/ANS 8.1, *Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors.)* LLNL had originally planned to conduct this review as part of the Triennial Review of Criticality Safety. This issue is mitigated by quarterly walkthroughs/inspections by a qualified criticality safety engineer of each B332 workstation which handles fissionable material. LLNL has requested an approval from LSO to defer this review to the next fiscal year.

Performance Measure 7.4	Good
Maintain an environmental management program consistent with the DOE-approved baseline, funding levels, policy, and negotiated regulatory requirements. • Demonstrate performance of the ISO 14001 Environmental Management System. • Effectively manage the direct funded environmental restoration and waste management programs, including environmental compliance agreements. • Maintain compliance with applicable federal, state, and local environmental laws and DOE Work Smart Standards.	

Overall, the Contractor did a satisfactory job on the environmental management program encompassing Environmental Management System implementation, waste management operations, and environmental restoration activities.

The Contractor did a satisfactory job related to the requirement to implement an ISO 14001 Environmental Management System (EMS) at the institutional level. However, the Contractor has not fully implemented an ISO 14001 EMS within the line programs. A recent 2007 HS-64 Independent Oversight Inspection included EMS implementation as a focus area and noted there

was limited implementation by several line organizations and that increased LLNL and LSO attention is warranted.

In addition, the Contractor has been slow to react to changing circumstances related to more aggressive energy and water use reduction goals related to EMS actions and programs. An example is a request by the water supplier for voluntary 10% reductions in water use due to low precipitation and Sierra snowpack levels in 2007. Although water use was not considered as a significant aspect this request by the San Francisco Public Utilities Commission (April 2007) was absent from a recent ISO 14001 briefing to Contractor senior management that included changing circumstances, new legal and other requirements.

The Contractor did an outstanding job on waste management activities. The contractor is on schedule to dispose of the forecasted amount of waste to the Nevada Test Site. In addition, the contractor has already exceeded the amount of waste disposed at the $0.50/ ft3 efficiency cost. The contractor implemented the chemical reagent streamlining effort and prepared the authorized limits package. The chemical reagent streamlining effort has shown greater than 10% savings for that work package. Due to circumstances beyond the contractor's control, the authorized limits package will be reworked.

The contractor made good progress on applying cost savings at both Site 300 and Livermore Site Projects, applying cost savings at Livermore Site to source Area remediation and carrying over Site 300 FY07 savings to implement Pit 7 and B850 remediation in FY08.

All schedule milestones were completed on time or ahead of schedule.

Notes

The Contractor needs to complete full implementation of ISO 14001 Environmental Management System within the line programs.

Performance Objective 8	Good
Maintain secure operations in an efficient and effective manner in support of mission objectives.	

Performance Measure 8.1	Good
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 of all Security functional areas. In order to complement the assessments by the Safeguards and Security Organization, the LLNL directorates will conduct a select number of 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 (CREM). • Effectively account for Special Nuclear Materials. • Implement corrective actions as a result of findings from external agencies in accordance with the approved timeline in the corrective action plan. • Implement and maintain a protection strategy that meets requirements of the current Design Base Threat (DBT) policy. • Execute all Program Execution Guidance (PEG) and Local Execution Guidance (LEG) milestones contained in the approved FY 2007 Site Security Annual Operating Plan, or as modified by the change control process.	

The Lawrence Livermore National Laboratory (LLNL) is given a "Good" rating by LSO in maintaining secure operations in an efficient and effective manner in support of mission objectives.

The LLNL self-assessment was supported by LLNL senior management, included pre-assessment training to achieve a uniform application across the Directorates, and identified institutional improvement opportunities. Management of safeguards and security self-assessment activities including awareness of lessons learned and monitoring corrective action planning was improved by use of an issues tracking system.

Safeguards and security activities were managed according to the scope of work approved by the Livermore Site Office (LSO) in the LLNL Annual Operating Plan (AOP). AOP milestones and schedules were completed on time and validated as completed by LSO.

LLNL was successful in sustaining the 2003 Design Basis Threat (DBT) protection strategy and developing plans for implementing the 2005 DBT protection strategy. Protective force training and operations, and physical security systems management are integrated into protection strategy planning, execution, and testing. Protective Force management was significantly improved as demonstrated through training, performance tests, and exercises.

The DOE Office of Inspector General (OIG) reported that LLNL was a "notable exception" to problems at other NNSA sites in meeting certification and accreditation requirements. Efficiencies in cyber security management were achieved by revising the security plan for the unclassified Institutional Support Services Backbone Network to more fully describe each of the institutional services provided by this network and consolidate twenty-nine individual unclassified security plans into four plans.

Notes

Further emphasis by LLNL on self-assessment activities is needed to reduce the significance of DOE and NNSA program evaluations in identifying areas of LLNL non-compliance with federal security requirements.

Performance Measure 8.2	Outstanding
Detect, deter, and mitigate foreign intelligence collection and espionage and international terrorist threats.	

The University of California (UC) Counterintelligence Office (CI) Office, Lawrence Livermore National Laboratory (LLNL) performed outstandingly during this reporting period (October 1, 2006 thru June 30, 2007). The CI Office significantly exceeded the operational performance expectations including tasks and deliverables. During the period 16-25 Jul 07, the CI Office was inspected by an external inspections team directed by the Deputy Director, Office of Counterintelligence. While the actual inspection rating has not been finalized, during the out brief to the laboratory director the lead inspector advised the CI program was a much stronger than found during the last inspection. (The CI Office was rated "Excellent" in the 2004 inspection). The lead inspector also advised that three CI methodologies developed by the CI Office would be benchmarked throughout the CI enterprise. In discussing the inspection results with the lead inspector, for the purpose of providing this evaluation input, the lead inspector stated that the preliminary evaluation was that of "excellent," and that he expected that to remain the rating as the final report was consolidated and issued. The CI Office continues to set the "Gold Standard" for collections by publishing 131 Intelligence Information Reports (IIRs), the largest number within the CI enterprise. These IIRs are the direct result of collection requirements set forth by not only CI but also the U.S. Intelligence Community (USIC). The IIRs were disseminated throughout the USIC and NNSA senior management with much positive feedback. The CI Office received 12 follow up messages citing the importance of specific IIRs and/or requesting further information concerning the subject matter. One of the IIRs had a "5" rating, the highest evaluation from the Federal Bureau of Investigation (FBI). Due to its success in this area, the CI Office's personnel were utilized to train two other CI offices in the production of IIRs resulting in their respective IIR production numbers dramatically increasing to date in FY 2007. The CI Office facilitated the collection of an estimated 300 to 500 additional IIRs in conjunction with the USIC.

The CI Office maintains a Suspicious Incident Chart in support of the overall counterterrorism (CT) effort at LLNL. The effort involves a cooperative arrangement between the Livermore Police Department, UC Police Department, Safeguards & Security Organization, the CI Program at Sandia National Laboratory-CA (SNL CA) and the FBI. It was the first such program to be

developed and sustained throughout the CI enterprise. Analyses of the Suspicious Incidents Reports for possible indicators of pre-attack surveillance are conducted to detect or deter any terrorist's attacks. Due to a matter evolving out of this effort, the LLNL Director changed the neighborhood pass policy for the East Highway, which is adjacent to LLNL and SNL CA. Also, as a result of the analyses of a second incident, critical information was provided to a member of the USIC.

The CI Office's outstanding publication *Russia Outlook* (8 issues during the reporting period) is distributed to the Material Protection, Control and Accountability Program (MPC&A), International Policy Initiatives for Proliferation Prevention (IPPP), Nuclear Cities Initiative (NCI), International Science and Technology Center (ISTC), and the Science and Technology Center of the Ukraine (STCU). During the reporting period, the CI Office produced nine Tech Transfer Notes and seven CI Case (spy) of the Month for the laboratory's personnel awareness education. During this period, it conducted 14 personal briefings to 213 newly hired LLNL personnel. It is very clear from the amount of voluntary reporting the CI Office receives that its awareness program is working in an outstanding fashion.

The CI Office's liaison efforts were superior with close relationships with external agencies of the USIC. It has worked closely with the FBI, San Francisco Field Office, FBI's Bay Area Terrorism Working Group, Regional CI Working Group, and the Central Intelligence Agency.

During this year, all 15 employees of the CI Office attended advanced professional training courses beating the CI performance measure of sending 60% of CI personnel to advanced training. The HQ Training Program Director categorized the CI Office's training program as outstanding with much of it conducted locally due to its effort to minimize fund expenditures in FY 2007.

The CI Office's Analysis Program is rated outstanding by the HQ Analysis Program Director. It is the premier collection and reporting CI office in the enterprise. It produced one of the best special reports in the CI enterprise this year. Two other classified special reports were produced, a significant achievement. In addition, the analyst conducted peer reviews of CI products from other CI offices. Also, the analyst identified a CI concern from an intelligence document that resulted in a special briefing to the LLNL Industrial Partnership Office.

The CI Office's investigations adhered to guidelines in the CI Procedural Guidelines Document, December 21, 2004, Part III, Chapter 2, Operations and Investigations Program (OIP). The investigations many of which are joint with the FBI have been categorized as "top notch" and "well done" by HQ case reviewers.

The CI Office is very diligent in providing support to Special Access Program (SAP) resources. This year there was a DOE HQ inspection of the LLNL SAP programs and was sited as having a best in the nation program. Individuals in SAPs are considered in High Risk positions and receive priority attention from the CI Office.
During FY 2007 (1 Oct 06 thru 30 Jun 07) the CI Office conducted 242 personal travel briefings and 206 personal travel debriefings of LLNL personnel who traveled mostly to sensitive foreign countries. It conducted 61 personal briefings of hosts of foreign visitors to LLNL and 28

personal debriefings of these hosts. Information volunteered by LLNL personnel concerning CI concerns or issues resulted in 73 additional contact reports demonstrating the effectiveness of the CI Office's Awareness Program. The briefing and debriefing numbers are some of the highest in the CI enterprise. The resulting inputs into various CI databases are some of the most comprehensive and professionally developed in the CI enterprise.

The CI Office' cyber personnel continued initiated a Cyber Action Team consisting of LLNL's Deputy Director, the Associate Director for Safeguards & Security, the Chief Information Officer (CIO), the Deputy CIO, the Cyber Security Strategist, the Senior Counterintelligence Officer and the Cyber CIO. The Team meets bi-weekly to discuss/review cyber threats and risks and recommends specific strategies to mitigate the risks.

The CI Office conducted 10 personal CI/CT briefings to 4,998 personnel and 14 personal briefings to System Administrators as a continuing effort to protect those sensitive resources.

Performance Objective 9	Outstanding
Improve and maintain effective business processes that safeguard public assets and support mission objectives; maintain and develop a skilled workforce to support mission objective; and sustain community initiatives.	

Performance Measure 9.1	Good
Demonstrate effective internal business controls and continuous improvement to maintain acceptable Financial Management and Human Resources systems and approved Procurement, Personal Property Management, and Litigation Management systems. This includes the management of a risk-based, cross-functional, integrated, and credible assessment program with effective business processes and supporting information technologies.	

Financial Management

Overall, the Contractor exceeded expectations by demonstrating effective internal business controls and the maintenance of an acceptable Financial Management system. The areas considered in the rating were: (i) accurate resource planning, formulation and validation processes; (ii) communication and coordination with LSO (and Office of Field Financial Management (OFFM)) regarding resource management; (iii) performance results of the financial assessment criteria developed by the OFFM; (iv) special Financial Management Initiatives and (v) CFO specific Implementation Guideline Initiatives.

Accurate Resource Planning, Formulation and Validation Process

The contractor produced a number of accurate budget plans that were submitted to HQ program office staffs as required. The contractor and LSO worked closely on over 100 Field Work Proposals submitted via the electronic Proposal Management Activity (ePMA) system. In addition, LSO conducted a budget validation which was completed in July 2007. The LSO Validation Team concluded the budget estimates presented by the contractor were complete, reasonable, documented and consistent with Headquarters programmatic guidance. The programs validated were the Readiness in Base and Technical Facilities and the Advanced Simulation and Computing Campaign.

Communication and Coordination with LSO (and OFFM) regarding Resource Management

The contractor is quite open in regards to communication with LSO and OFFM in the area of financial management. Routine, standing meetings occur at various levels between the LSO management and contractor staff. The LSO Budget Analyst has ongoing communication with the Budget Office, Accounting Office and the Defense and Nuclear Technologies business office. During May 2007, the LSO Contract Administration and Resource Management Office were invited and spoke to the contractor's Financial Management Forum group.

Performance Results of the Financial Management Criteria Developed by the Office of Field Financial Management

The contractor has met the fundamental principles for financial management established by OFFM. The most recent rating of record from OFFM was the Third Quarter of FY 2007. The

majority of the sub-measures rated by OFFM received a rating of good or outstanding. The contractor also provided a third quarter performance report to OFFM.

Special Financial Management Initiatives:

- Implementation of the Sarbanes-Oxley Act for Financial Management.
  The contractor self-assessment indicates the CFO is fully conforming to guidance issued by OFFM in implementing OMB Circular A-123. In FY 2007, the contractor documented and assessed low and moderate risk internal controls and is on track to complete evaluation and testing on time. No significant material deficiencies are expected to be discovered.
- Changes to the Indirect Rate Structure
  The cost model changes implemented in FY07 (Phase 2) reduced the number of indirect rates from 98 to 63 and continued to simplify an inherently complex system by shifting to fewer and larger cost pools resulting in efficiencies from decreased maintenance, monitoring, and oversight.
- Implementation of the Financial System Upgrade
  The contractor completed implementation of the Financial System Upgrade (FSU) project which is part of a larger initiative, the Enterprise Project Accounting and Reporting (EPAR) project. In addition, the second phase of EPAR, the Project Performance Reporting Pilot project was initiated to demonstrate the project reporting, budgeting and planning capabilities of the new financial system.

CFO Specific Implementation Guideline Initiatives:

- Document Financial Processes and Embark on Continuous Process Improvement Initiative.
  All Financial Policies and Procedures have been reviewed an updated to assure compliance with all federal and state requirements, DOE regulations, Cost Accounting Standards, Generally Accepted Accounting Principles and UC requirements.
- Centralize Administrative Oversight of the Financial Community While Preserving a Matrix Structure.
  The CFO, in conjunction with the program areas, has undertaken a phased approach to centralize the administrative oversight of the financial community while preserving the matrix structure to address program needs. Approximately 60% of the financial management capabilities have been successfully centralized to date.
- Rollout the Electronic Approval of Work Proposal (eAWP).
  The eAWP project has streamlined the WFO proposal process, reducing cycle time and costs. The robust database, e-mail alerts, and workflow requirements are built in to assist users in submitting complete and accurate proposals and replacing the previous manual system for routing proposals.

Human Resources

AHRD demonstrated delivery against all milestones established in the Implementation Guidelines. Specifically:

1. In response to a 2006 OIG Inspection Report finding, Human Resources implemented the eXIT program and partnered with the Security Department to deploy an institutional electronic termination system (VISION). VISION bridges separations with site access and clearance termination, providing each directorate the ability to manage their employees and non-employees (affiliates) more efficiently; previously, no such tool existed for non-employees.
2. The LAPIS project was completed and electronic personnel forms implemented. The Human Resources Department continues to implement enhancements to the recently upgraded LAPIS; examples include: a self service module for employees and supervisors, electronic personnel action forms and processing, and during the 3rd quarter, the team developed a prototype to manage the Offer Letter and Decision Process for the contract transition from UC to LLNS (going live in July).
3. All AHRD business processes were documented and an on-line library created for ongoing review and maintenance.
4. Trained HR staff on relevant employment laws with particular emphasis on differences in the private sector.

Additional accomplishments include:

1. Enhancement of metrics to track goals including:

    a. Acquire and retain a workforce sufficient to meet mission requirements,
    b. Increase Workforce Diversity, and
    c. Enhance workforce capability through training and education.

2. Implementation of Quest Stat Application Change Management (ACM), strengthening internal controls for HR applications in compliance with Sarbanes-Oxley.
3. Developed contents of web based training for annual employee refresher on protecting personnel information (PII). The web based training course will become an institutional requirement for individuals having access to HR data.

Overall

Assessments and improvements are accomplished to ensure adequate controls are in place, or placed, to meet HR functional requirements.

Procurement

The contractor performed the procurement function at the "outstanding" level during the FY 2007 performance period. This rating is based primarily on procurement's performance under Objectives Matrix Balanced Scorecard Measures and also takes into consideration the contractor's self-assessment, operational awareness activities conducted by the site office, and

third party independent reviews. The Objectives Matrix provides the protocol for assessing the comprehensive performance of the Procurement System on a real time basis and has been in use since FY 2003.

The contractor has a well-developed, comprehensive self-assessment and evaluation program that ensures compliance with internal and external policies and procedures. This same program was reviewed by the NNSA Procurement Evaluation & Re-engineering Team (PERT) in August 2005 and was reported as a "best practice." The contractor's internal information systems contribute to its ability to produce quality documents, implement and monitor internal controls, self-assess the transactions, and implement timely and effective corrective actions. The methodology, approach, and analysis performed by the procurement staff are exemplary and serve as a sound basis for evaluating the contractor's purchasing system.

Based on the results of the Objectives Matrix, the procurement system continued to perform at a very high level in FY 2007. Self-assessment reviews of purchase orders/subcontracts, UniCard transactions, and blanket release transactions disclosed relatively few findings. Procurement quality, which is single most important measure, was measured at the outstanding level in FY 2007.

Overall, the contractor's procurement management organization has strong leadership and an effective management structure and in conjunction with an educated staff, maintains accurate and current policies and practices, fosters and maintains good relationships with internal and external customers, and develops and implements innovative improvement projects to reduce procurement costs, which all contribute to a successful purchasing system. The contractor's procurement management system is mature, well managed, and supported organizationally by top management. The contractor's procurement department is the standard for other entities within the agency to benchmark.

Notes

Although the procurement function is currently being performed at the "outstanding" level, the contractor's ability to retain a staff of highly qualified purchasing and subcontracting professionals during contract transition is a concern. The department has experienced relatively high turnover in recent years and has lost a number of its experienced procurement representatives and managers, many to the Lawrence Berkeley Laboratory, which remains under the management of the University of California.

Property

The contractor performed the Personal Property Management function overall at the "**Outstanding"** level during the Fiscal Year (FY) 2007 performance period. The Personal Property Management System is based primarily on the Property Performance Assessment Model (PPAM). The PPAM provides the protocol for assessing the comprehensive performance of the Personal Property Management Program on a real time basis and has been in use since its development in 1996. On-site validation reviews were performed by federal staff throughout FY 2007.

This evaluation took into consideration the contractor's self assessment and operational awareness activities performed by the NNSA Service Center based on two quarters of data. Other factors considered were the existence of appropriate internal controls and compliance with applicable laws, regulations, and orders.

The following are notable accomplishments for this review period:

- LLNL completed their FY 2007 Wall-to-Wall Inventory on February 28, 2007. Inventory results of Attractive personal property are generally acknowledged to be the single, most important determinant in the evaluation of an overall Personal Property Management Program. The results for the FY 2007 inventory of Attractive items remains at a high accountability rate of 99.92 percent.
- The Equipment inventory resulted in a find rate of 99.94 percent. In coordination with the Associate Director's Property Representatives, Property Management compiles lessons learned from the inventory, identifies trends, and utilizes the data to develop action plans to further strengthen the Laboratory's overall property management program.
- LLNL accounted for 100% of their Precious Metals inventory for three consecutive years. This continues to be an outstanding achievement in the control and administration of their Precious Metals Program since LLNL has the largest precious metals holdings and largest amount of custodians of all the Laboratories.
- LLNL continues to aggressively manage a decentralized vehicle management program that places overall responsibility and accountability for vehicles with the directorates as well as managing fleet utilization.

Overall, Personal Property Management Program is a solid and mature program with effective internal controls. The program is well managed and supported organizationally by top management. The staff understands their role and possesses the necessary training in accomplishing the overall objectives of the program. The program is dynamic in nature and management is continuously working to improve performance. The contractor's property management and staff embrace and support change and is critically assessed to determine whether it makes good business sense. The contractor fully understands the concept of customer satisfaction and the organizational dynamics necessary to achieve it.

Litigation

The Contractor has done a good job of adhering to the requirements and procedures outlined in the approved "Litigation Management Policy and Procedures". The Contractor has consistently kept LSO's Site Counsel informed of developing issues over the past year and has involved LSO in key litigation management decisions.

Performance Measure 9.2	Outstanding
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.	

LLNL's integrated Audit Tracker System (ATS) has been highly effective in documenting and tracking management corrective actions (MCAs) for internal, external and significant self-assessment corrective actions. The ATS capability includes the tracking of MCAs to agree upon corrective action dates; no high risk corrective actions are past due. NNSA Livermore Site Office officials have been provided on-going access to the ATS database for review and reports generation. While the performance measure requires the Audit and Oversight Office to submit semiannual reports on its corrective actions, it has submitted them to LSO on a monthly basis.

Performance Measure 9.3	Outstanding
Maintain a skilled and diverse workforce that meets the Laboratory's long-range core and critical skills requirements by implementing a human resource strategy that leverages student programs and UC relationships.	

AHRD demonstrated delivery against all milestones established in the Implementation Guidelines. Specifically:

1. The Workforce & Communications Working Group set executive direction to guide HR initiatives, including change management initiatives, HR actions (reclassifications, internal/external hiring), and annual performance appraisal form revision.
2. Analysis of the CS workforce revealed that FY07 attrition rate through 3rd quarter is less than 3% for DP critical skills.
3. Analysis of recruitment/retention in the University Relations pipeline programs revealed:

    1. The 1st year of the Talent Acquisition Project was completed and the UC Irvine/Riverside Campus Pilot established institutional relationships that foster campus recruitment and collaborations.
    2. FY07 retention rate for SEGRF Program at 44%. Aggressive hiring at start of fiscal year has the program back to target of 55 students.
    3. Department of Homeland Security (DHS) intern and fellowship program has 30 students assigned for summer 2007, the highest of the DHS hosting agencies.
    4. Lawrence Fellowship retention rate for FY02-present is ~70% (i.e., of the 16 fellows who completed their fellowship since FY02, 11 were hired into other positions at LLNL).

4. Standardized EEO reports were created for analysis of hiring, promotions and terminations.
5. Educational metrics were developed to assess relationship between educational development and career progression.

Additional accomplishments include:

1. Earned a 2006 Secretary of Energy EEO and Diversity Best Practice Award for their Museum of Tolerance Leadership Development Program. This award is designed to recognize outstanding initiatives which support the Secretary's commitment to EEO and Diversity at DOE.
2. Implemented an online attitude survey for separating employees to complete upon termination, providing timely work climate feedback to managers.
3. Provided retraining for returning disabled military personnel, by hiring two employees through the Livermore community Sentinels of Freedom Program.
4. 100% of HR pre-transition initiatives are completed and retirement workshops will continue through July and August.
5. Implemented multiple strategies to provide employees with information regarding transition to mitigate the impact of the contract change on employee morale.
6. A pre-employment drug testing program was implemented.
7. Coordinated the Laboratory's participation (with Public Affairs) at the American Association for the Advancement of Science (AAAS) in San Francisco showcasing their new branding initiative.
8. Partnered with Engineering to create a new model (i.e., Accelerated College Event) for accelerating the selection process for new graduates, reducing the "interview to offer" cycle from 10 to 2 weeks.
9. Based on the Laboratory's Emerging Leader Program model, redesigned employee orientation from a single event compliance program into a comprehensive six month welcome program to increase retention of new hires. The new onboarding program includes briefings by senior management, a site tour, a website with comprehensive resources and follow-up sessions.

Overall

Improvements are accomplished to maintain effective HR processes and a skilled & diverse workforce that meets the Laboratory's long-range core and critical skills requirements. It is particularly noteworthy that a) on behalf of the Laboratory, AHRD earned a 2006 Secretary of Energy EEO and Diversity Best Practice Award for their Museum of Tolerance Leadership Development Program; and, b) completed 100% of its pre-transition initiatives.

Notes

Workforce concerns regarding contract transition is an ongoing challenge.

"Economy upturn" has resulted in increased competition for talent, particularly in high tech market.

The potential for unionization of Laboratory's skilled crafts exists.

Performance Measure 9.4	Outstanding
Implement the plan to manage the Defense Program's full-time-equivalent reductions as specified in the "Defense Programs FY 2007 to FY 2011 Program and Resource Guidance," dated March 4, 2005.	

In FY07, LLNL exceeded the Objective 9.4 by reducing the FTEs. The FY 2007 Q2 Average DP FTEs of ~4,782 has well below the required level of 5,013 FTEs when including structural adjustments and therefore this Performance Measure should be rated as Outstanding.

Performance Measure 9.5	Good
Sustain leadership and management development programs that achieve workforce and diversity objectives.	

AHRD demonstrated delivery against all milestones established in the Implementation Guidelines. Specifically:

1. Directorate Leadership Development Program (DLDP) succession programs are active in all Directorates, with 31% of graduates assuming higher level responsibilities.
2. Females and/or minorities represent over 50% of DLPD participants.
3. 99.5% of employees completed UC Ethics briefing.
4. 98.4% of supervisors completed Sexual Harassment Prevention (SHP) briefing.
5. Developed strategy for FY08 implementation of sexual harassment retraining which includes continued use of Workplace Answers product.

Additional accomplishments include:

1. Earned an American Society for Training & Development (ASTD) BEST Award, using key outcome metrics and best practices results to document award justifications.
2. Core Leadership & Management Development (L&MD) Programs continue to develop LLNL Supervisors and Managers with a high level of participant satisfaction; 50% of L&MD participants were women and/or minorities.
3. Conducted FY07 LLNL Leadership Series – Dr. Peter Senge, "Systems Thinking and Leadership" and Dr. Lee Bolman, "Leadership Strategies in Uncertain Times" with attendance by over 537 employees; 82% in the 100, 200 and management series.
4. Executed Institutional Change Management Plan to maintain mission focus during contract transition.
5. Partnered with Laboratory Director to design and deploy one-day Executive Management offsite to prepare 64 current and future key leaders for change and transition.
6. Institute for Management Studies (IMS) Leadership Speaker Series added to Core Leadership programs offering development solutions for Division Leaders through Associate Directors, shared with UC who now has membership with IMS.
7. E-Learning user accounts increased by 32%; 35% of core workforce have active accounts; scientists and technicians dominate usage of accounts.

8. "Career Development" Learning Center launched a web based system to support managers, supervisors and employees in career mobility, self development and mentoring.

Overall

Improvements are accomplished to maintain effective HR processes and sustain leadership and management development programs that achieve workforce and diversity objectives. It is particularly noteworthy that AHRD earned, on behalf of the Laboratory, an ASTD award for demonstration of enterprise-wide success as a result of employee learning and development.

Performance Measure 9.6	Outstanding
Consistent with the guidance of the Secretary of Energy, LLNL shall conduct K-12 education activities with the dual goals of providing community outreach and making a substantive contribution to science education needs.	

The contractor did an outstanding job establishing and maintaining science education outreach programs with the joint goals of community outreach and substantive contribution to science education.

Two organizations contribute to the accomplishments of this performance measure, the Science & Technology Education Program (STEP) and the Public Affairs Office (PAO).
Working in partnership, STEP leads the Laboratory's efforts in K-14 science, technology, engineering and mathematics (STEM) while PAO leads the educational outreach programs.
Both organizations have established close working relationships with Tri-Valley and Central Valley Schools, UC campuses and other universities and colleges.
Major progress was made in expanding educational outreach to the Central Valley.

Highlights in this area include: 1) The contractor made significant progress in expanding educational outreach to San Joaquin and Central Valley: more than 1000 students and teachers participated in new events at Tracy schools including the "Got Science?" program; six "Science on Saturday" lectures were held with 1250 attendees; and the Edward Teller Scholarship Award was extended to students in the Tracy Unified School District. 2) The contractor made significant enhancements to the LLNL/UC Davis Edward Teller Education Center: the contractor awarded $50K from DOE for four teachers to participate in training and internships; the Teacher Research Academy (TRA) was accepted as a part of the M.S. in Education program at Cal State University East Bay; 176 teachers participated in the Teacher Research Academy, up from 115 the year before; 3) The contractor is the organizing sponsor of the Tri-Valley Science & Engineering Fair (TVSEF). For TVSEF 2007, 298 students entered 230 projects – a total of 216 awards were presented.

Performance Measure 9.7	Good
Develop local community initiatives to include those programs or responses addressing mutual goals and concerns.	

Responsibility for this measure rests with the Public Affairs Office (PAO). The contractor did a good job in developing a targeted outreach and informational campaign in the City of Tracy. The contractor worked closely with the NNSA Livermore Site Office on matters related to Public Affairs.

Highlights include: 1) The contractor instituted a targeted outreach and informational campaign in the City of Tracy: this campaign included reporting Site 300 activities to the Tracy City Council; Community Tours of Site 300 (7 tours have been conducted to date with a total of 69 visitors); a Tracy version of Discover LLNL community newsletter was mailed to Tracy residents; involvement in City of Tracy education activities; and placing a full page display ad about the Lab in the 2007 Tracy Community Resource Guide. 2) The Fall 2006 community survey conducted by Charlton Group showed 83% of respondents had a positive association with LLNL and 79% felt the Lab is a good neighbor.

Notes

PAO did a good job in developing a targeted outreach and informational campaign in the City of Tracy. PAO needs to work on new strategies over the next year to address activists outreach techniques. It would be helpful if the PAO strategy to deal with controversial issues included presentations at all public meetings to discuss the Lab's position on these issues.

Performance Objective 10	Outstanding
Perform and complete Pre Transition and Transition Activities.	

Performance Measure 10.1	Outstanding
Perform pre-transition activities to ensure an orderly succession to a new contractor by September 30, 2007 and contract closeout.	

This performance measure was developed to cover LLNL's preparation for the transition from its current M&O contractor (incumbent) to the new M&O contractor (successor). The scope of incumbent's pre-transition is to prepare for the transition of employees, facilities, property, systems, policies, processes, agreements, program scope, schedule and budget to the successor.

The incumbent sought out lessons learned from transitions at other sites. More importantly, the incumbent took these lessons learned and carefully planned out their pre-transition activities. The early start allowed time for the incumbent and successor to address administrative and process issues, for example,

- Formed transition teams and established good lines of communications;
- Reviewed and updated personnel records;
- Compiled lists of all regulator permits and memorandum of understanding;
- Investigated the impacts of possessory taxes;
- Compiled list of institutional policies and procedures;
- Identified early critical decisions that needed to be considered by the successor;
- Verified the inventories of facilities, equipment, and property;
- Prepared for colleague-level discussions between the incumbent and successor.

While preparing for this transition, the incumbent ensured that work continued uninterrupted, deliverables were achieved, and safety, security, and environmental protection was maintained.

In summary, the incumbent did an outstanding job in identifying and assessing critical activities that allowed the successor to assume full accountability and responsibility for LLNL by October 1, 2007.

Notes

Submittal of Disclosure Statement. The State of California regulations require a RCRA permit applicant to submit a Disclosure Statement. This requirement is in the California Health and Safety Code; however, the incumbent was unaware of this requirement until informed by the State in mid-July 2007. The Disclosure Statement was submitted to the State in August 2007. The incumbent should have identified this requirement during pre-transition. At a minimum, they should have identified it earlier during transition.

Notification of changes to environmental permits. The incumbent informed LSO that they needed to notify Alameda County of the change in operator for two additional permits, B332 sludge dewatering unit and B231 resin mixing unit. The incumbent should have identified this

notification requirement for these permits during pre-transition. At a minimum, they should have identified them earlier during transition.

Performance Measure 10.2	Good
Complete transition activities with the successor contractor by September 30, 2007.	

This performance measure was developed to cover the incumbent's support to the successor for an efficient transition. The incumbent's support is critical to a successful transition; the incumbent has the only contractual authority to direct its personnel. Despite the stress associated with the changes (e.g., benefit and pension plans, possible reorganizations, authorities and responsibilities) during transition, the incumbent maintained a high performance standard throughout the transition. Examples of the incumbents support are

- Established the logistics for the successor; e.g., temporary office space, office equipment, office supplies;
- Coordinated transition activities, such as, blue sheeting, walk downs (incumbent was helpful once they understood that the walk downs were not inspections), town hall meetings;
- Maintained early and frequent communications with personnel through LLNL newspaper, meetings, and website.
- Met deliverables while maintaining safe and secure operations.

Notes

Participation in colleague-level briefings. LSO planned to participate and/or observe the briefings. To allow for open communication between the incumbent and successor, the incumbent recommended that LSO not participate in these briefings. LSO's expectation was that follow-on briefings would be scheduled to allow LSO to participate. But because of the limited time, these follow-on briefings were either not scheduled or difficult to schedule. The incumbent should have scheduled follow-on briefings between the LSO, successor, and incumbent.

Approval of RCRA permit modification. The new owner or operator shall submit a revised RCRA permit application to the State of California no later than 90 days prior to the scheduled change, which meant that LSO and the successor needed to submit the revised permit by July 3, 2007. The incumbent informed the LSO on June 29, 2007, that the LSO needed to formally request a "15-day relief period from the 90-day notification". The incumbent should have requested this extension earlier, not 4 days before the deadline.

Appendices
Appendix A
Ratings

Overall LLNL Rating

Mission (Performance Objectives 1-6) **Outstanding**

Operations (Performance Objectives 7-10) **Good**

Rating by Performance Objective

Mission		
1	Conduct warhead certification and assessment actions using the Quantification of Margins and Uncertainties (QMU) methodology.	**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 site 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.	**Outstanding**
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		
7	Maintain safe and environmentally sound operations in an efficient and effective manner in support of mission objectives.	**Satisfactory**
8	Maintain secure operations in an efficient and effective manner in support of mission objectives.	**Good**
9	Improve and maintain effective business processes that safeguard public assets and support mission objectives; maintain and develop a skilled workforce to support mission objective; and sustain community initiatives.	**Outstanding**
10	Perform and complete Pre Transition and Transition Activities.	**Outstanding**

Appendix A
Ratings
Ratings by Performance Measure

1	Conduct warhead certification and assessment actions using the Quantification of Margins and Uncertainties (QMU) methodology.	Outstanding
1.1	In coordination with the other NNSA weapons laboratories, continue to refine, document and implement a common certification/assessment methodology based upon the August 2006 QMU workshop.	Good
1.2	Demonstrate application of the common certification/assessment methodology, (QMU) in major warhead assessments and the certification of Life Extension Program (LEP) warheads.	Outstanding
1.3	Complete the annual assessments of the safety, reliability, and performance of all warhead types in the stockpile, including conclusions on whether nuclear testing is required for resolution of any issue, the adequacy of Stockpile Stewardship tools, and other issues as required by law. Support NNSA as required during interagency and community coordination of the Annual Assessment Process.	Outstanding

2	Develop with NNSA and implement long-term, balanced, integrated stewardship.	Outstanding
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. In cooperation with LANL, develop and execute a program of hydrotests and subcritical experiments that addresses assessment and certification needs.	Outstanding
2.2	Conduct design and analysis of nuclear weapons that address the future needs of the U.S. nuclear deterrent.	Good
2.3	Develop and demonstrate Science Campaign models, experiments, and capabilities that support the ongoing needs of stockpile assessment and certification.	Good
2.4	Develop and demonstrate Advanced Simulation Computing (ASC) capabilities that support the ongoing needs of stockpile assessment and certification.	Outstanding
2.5	Continue to improve and apply tools and models for prediction of systems, subsystems, and/or component lifetimes for FY 2007, determine and recommend a technically defensible estimate of the pit lifetime for the primary of each of the weapons systems for which LLNL is responsible.	Outstanding
2.6	Develop and implement a collaborative and complementary program of experiments at High Energy Density (HED) facilities that supports assessment and certification needs.	Outstanding
2.7	Develop, implement, and lead an integrated national program (National Ignition Campaign (NIC)) with the goal of executing a credible ignition experimental campaign on NIF in 2010.	Outstanding
2.8	In cooperation with LANL and NNSA HQ, continue the development and implementation of an integrated program and governance model for plutonium capabilities of LANL and LLNL to support the overall NNSA strategic requirements.	Outstanding
2.9	In support of Responsive Infrastructure, continue to work with the NNSA Transformation office in completing the implementation plan and in monitoring the current state of responsiveness via defined metrics. In the broader arena, continue to look for and implement efficiencies within LLNL and support the implementation of efficiencies throughout the NWC consistent with the 2030 vision, mission, and implementation strategy.	Outstanding

3	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.	Outstanding
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).	Outstanding
3.2	Deliver on the major milestones for the LEP in accordance with the joint DOE/DoD phase 6.x process. Continue to support LANL on the LEPs for the W-76 and the B61-7/11.	Outstanding
3.3	Deliver on Pit Manufacturing and Certification Project major milestones.	Good
3.4	Meet directive schedule requirements.	Outstanding
3.5	Provide technical support to production complex operations, including the Integrated Weapons Activity Plan (IWAP) or its successor, the weapons point of contact programs, and weapons response analyses.	Outstanding
3.6	Continue to implement and execute, in accordance with NNSA-approved plans, a weapons design and manufacturing quality assurance program consistent with NNSA requirements (QC-1, Rev 10).	Good
3.7	Develop and implement streamlined, multi-site, technical business practices with other Nuclear Weapons Complex partners.	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.	Outstanding
4.1	Provide technical capabilities to limit or prevent the spread of materials, technology, and expertise relating to weapons of mass destruction (WMD); eliminate or secure inventories of surplus materials and infrastructure usable for nuclear weapons; and enable the implementation of U.S. nonproliferation policy.	Outstanding
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.	Outstanding
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.	Outstanding
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 WMD and other threats against the U.S. homeland.	Outstanding
4.5	Apply advanced science and technology to meet immediate and long-term U.S. defense community needs.	Outstanding
4.6	Maintain and deploy, as required, nuclear emergency response teams for CONUS and OCONUS response to radiological and nuclear threats.	Outstanding

5.	Enhance and nurture a strong science, engineering, and technology base in support of national security strategic objectives.	Outstanding
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.	Outstanding
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.	Outstanding
5.3	Execute non-NNSA sponsored projects and programs that utilize the Laboratory's unique expertise, capabilities, and facilities in a manner that enhances the Laboratory's ability to accomplish its current and future national security missions, including those related to homeland security and homeland defense, while meeting the programmatic needs of the non-NNSA sponsors.	Outstanding
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.	Outstanding

6	Optimize current and evolving mission performance by providing effective and efficient facilities and infrastructure.	Good
6.1	Operate mission essential and user facilities as national capabilities, including National Ignition Facility, Device Assembly Facility, Superblock, Site 300, and High Performance ASC Computers.	Outstanding
6.2	Reduce the site footprint (non-process contaminated facilities) consistent with NNSA approved Complex 2030 infrastructure plans, which may include the transition of DP programmatic work from Site 300.	Outstanding
6.3	Execute construction projects as identified and agreed between NNSA and the Laboratories within scope, schedule, and budget.	Good
	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. • Conduct maintenance activities in accordance with the NNSA-approved Maintenance Implementation Plan (MIP). Maintain 2%+ maintenance funding relative to Real Property Value for FY 2007.	Outstanding
6.5	Support planning, implementation, and execution of special nuclear material (SNM) consolidation and/or relocation activities, including reducing inventories of surplus and excess SNM consistent with DOE/NNSA approved plans.	Good
6.6	Demonstrate progress towards achieving the energy efficiency goals and requirements of the Energy Policy Act of 2005 (EPACT 2005).	Satisfactory

7	Maintain safe and environmentally sound operations in an efficient and effective manner in support of mission objectives.	Satisfactory
7.1	Achieve continuous improvement in Integrated Safety Management System performance: • Assure consistent and effective application of ISM principles across all organization levels and across all Laboratory facilities. • Ensure effective implementation of an ES&H corrective action management program, including institutional corrective actions derived from violations enforceable under the Price Anderson Amendments Act. • Implement 10 CFR 851 (DOE Worker Safety Rule) across the institution by February 27, 2007, as described in the LSO-approved LLNL program description.	Satisfactory
7.2	Improve the following programs within the criteria identified: • The contractor's institutional systems engineering program within the NNSA-approved schedules. • An Emergency Management Program within the NNSA-approved schedules in the Emergency Readiness Assurance Plan (ERAP). • The relevant configuration management program tasks identified for implementation this year. • The Conduct of Operations Program by developing and implementing the applicability matrices within the NNSA-approved schedules.	Satisfactory
7.3	Comply with and achieve continuous improvement in nuclear safety and quality performance under 10 CFR 830 for both LLNL and LLNL operations at the Nevada Test Site. • Implement the Building 332 Documented Safety Analyses and Technical Safety Requirements within the NNSA-approved schedules and continue to reduce the number of technical safety requirement violations through continuous improvement in facility operations. • Implement and maintain a criticality safety program that meets the requirements of DOE Work Smart Standards and utilizes quantitative criticality safety metrics. • Implement the Unreviewed Safety Question process site wide within the NNSA-approved schedules.	Satisfactory
7.4	Maintain an environmental management program consistent with the DOE-approved baseline, funding levels, policy, and negotiated regulatory requirements. • Demonstrate performance of the ISO 14001 Environmental Management System. • Effectively manage the direct funded environmental restoration and waste management programs, including environmental compliance agreements. • Maintain compliance with applicable federal, state, and local environmental laws and DOE Work Smart Standards.	Good

8	Maintain secure operations in an efficient and effective manner in support of mission objectives.	Good
8.1	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 of all Security functional areas. In order to complement the assessments by the Safeguards and Security Organization, the LLNL directorates will conduct a select number of 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 (CREM). • Effectively account for Special Nuclear Materials. • Implement corrective actions as a result of findings from external agencies in accordance with the approved timeline in the corrective action plan. • Implement and maintain a protection strategy that meets requirements of the current Design Base Threat (DBT) policy. • Execute all Program Execution Guidance (PEG) and Local Execution Guidance (LEG) milestones contained in the approved FY 2007 Site Security Annual Operating Plan, or as modified by the change control process.	Good
8.2	Detect, deter, and mitigate foreign intelligence collection and espionage and international terrorist threats.	Outstanding

9	Improve and maintain effective business processes that safeguard public assets and support mission objectives; maintain and develop a skilled workforce to support mission objective; and sustain community initiatives.	Outstanding
9.1	Demonstrate effective internal business controls and continuous improvement to maintain acceptable Financial Management and Human Resources systems and approved Procurement, Personal Property Management, and Litigation Management systems. This includes the management of a risk-based, cross-functional, integrated, and credible assessment program with effective business processes and supporting information technologies.	Good
9.2	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.	Outstanding
9.3	Maintain a skilled and diverse workforce that meets the Laboratory's long-range core and critical skills requirements by implementing a human resource strategy that leverages student programs and UC relationships.	Outstanding
9.4	Implement the plan to manage the Defense Program's full-time-equivalent reductions as specified in the "Defense Programs FY 2007 to FY 2011 Program and Resource Guidance," dated March 4, 2005.	Outstanding
9.5	Sustain leadership and management development programs that achieve workforce and diversity objectives.	Good
9.6	Consistent with the guidance of the Secretary of Energy, LLNL shall conduct K-12 education activities with the dual goals of providing community outreach and making a substantive contribution to science education needs.	Outstanding
9.7	Develop local community initiatives to include those programs or responses addressing mutual goals and concerns.	Good

10	Perform and complete Pre Transition and Transition Activities.	Outstanding
10.1	Perform pre-transition activities to ensure an orderly succession to a new contractor by September 30, 2007 and contract closeout.	Outstanding
10.2	Complete transition activities with the successor contractor by September 30, 2007.	Good

Appendix B
Acronyms Used in This Report

CI	Counterintelligence
DBT	Design Basis Threat
DHS	Department of Homeland Security
DOE	U. S. Department of Energy
DWTF	Decontamination/Waste Treatment Facility (DWTF)
ETCU	Engineering Technology Complex Upgrade
FIRP	Facility and Infrastructure Recapitalization Program
HED	High Energy Density
ISM	Integrated Safety Management
ISSM	Integrated Safeguards and Security Management
IWAP	Integrated Weapons Activity Plan
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
LSO	Livermore Site Office
MC&A	Material Control and Accountability
NIF	National Ignition Facility
NNSA	National Nuclear Security Administration
NTS	Nevada Test Site
PISA	Potential Inadequacies to the Safety Analysis
QMU	Quantification of Margins and Uncertainties
RHWM	Radioactive and Hazardous waste management
RRW	Reliable Replacement Warhead
RTBF	Readiness in Technical Base and Facilities
SAFE	Security Awareness for Employees
SCIF	Sensitive Compartmented Information Facility
SECON	Security Condition
SEMI	Safety and Emergency Preparedness Inspection
SFI	Significant Finding Investigation
SNM	Special Nuclear Material
TSF	Terascale Simulation Facility
TSR	Technical Safety Requirements
TYCSP	Ten Year Comprehensive Site Plan
UC	University of California
USQ	Unreviewed Safety Question