



Department of Energy

Office of Science
Berkeley Site Office
Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90-1023
Berkeley, California 94720

JAN 30 2006

MEMORANDUM FOR: DISTRIBUTION LIST
FROM: AUNDRA RICHARDS, SITE MANAGER
BERKELEY SITE OFFICE
SUBJECT: FY 2005 ANNUAL PERFORMANCE EVALUATION
AND APPRAISAL REPORT LAWRENCE
BERKELEY NATIONAL LABORATORY

Attached is the Fiscal Year 2005 Annual Performance Evaluation and Appraisal of the Lawrence Berkeley National Laboratory. This evaluation and appraisal fulfills the requirements of Contract DE-AC03-76SF00098 (Appendix F), Clauses 2.6 and 5.3 and Contract DE-AC02-05CH11231 (Appendix B), Clause H.14 and I.82. The report supports and meets the contract requirements to: provide a summary of the results from the conduct of the Department of Energy (DOE) Berkeley Site Office (BSO) validation program and evaluation of performance of work; provide a written assessment of the Contractor's performance under the contract based upon DOE BSO appraisal program, and the Contracting Officer's evaluation of the Contractor's self-assessment; and provide the basis for determination of the Contractor's Program Performance fee.

Thank you for your assistance in completing this annual process. Please contact Chuck Marshall at 510-486-5184, charles.marshall@bso.science.doe.gov if you have further questions.

Attachment: As stated

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LBNL FY 2005 Annual Performance Evaluation & Appraisal

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 OakRidge, TN 37830

OIG (1 hc)

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 Rob Johnson
 Jim Krupnick
 John Chernowski

UCOP (2 hc)

Buck Koonce
 Sharon Eklund
 1111 Franklin Street
 Oakland, CA 94612

BSO Staff (8 hc, S Drive)

Aundra Richards
 Joe Krupa
 Carol Ingram
 Anne Raible
 Chuck Marshall
 Sandie Silva
 Maria Robles
 Barry Savnik



Fiscal Year 2005 Annual Performance Evaluation and Appraisal

Lawrence Berkeley National Laboratory



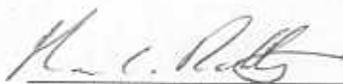
Prepared by:
U.S. Department of Energy
Office of Science
Berkeley Site Office



CONTRACTING OFFICER'S EVALUATION

The Department of Energy, Berkeley Site Office Senior Management reviewed and discussed the recommendations of functional managers and staff concerning the appropriate adjectival and numeric ratings with which to rate the University of California's performance in the management and operation of the Lawrence Berkeley National Laboratory. Based upon this process, an overall adjectival rating of "**Outstanding**" is recommended, based on a numeric rating of 90.7% for contract DE-AC03-76SF00098 during the period of October 1, 2004 through May 31, 2005. The overall adjectival rating of "**Outstanding**" is recommended, based on a numeric rating of 90.8% for contract DE-AC02-05CH11231 for the period June 1, 2005 through September 30, 2005. This recommendation has been forwarded to and considered by the Office of Science and approved. This report, entitled the "Fiscal Year 2005 Annual Performance Evaluation and Appraisal - Lawrence Berkeley National Laboratory" provides the basis for my determination, and is hereby endorsed and approved.

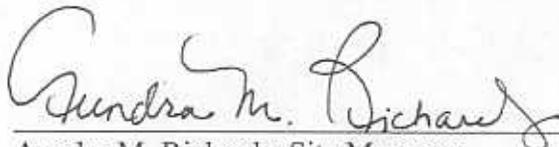
Recommendation:



Maria C. Robles, Contracting Officer
Department of Energy
Berkeley Site Office

Date: 1-30-06

Approval:



Aundra M. Richards, Site Manager
Department of Energy
Berkeley Site Office

Date: 1-30-06

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FY 2005 Annual Performance Evaluation and Appraisal of Lawrence Berkeley National Laboratory

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EXECUTIVE SUMMARY

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Executive Summary

Introduction

This Annual Performance Evaluation and Appraisal is produced by the U. S. Department of Energy (DOE) Berkeley Site Office (BSO). It provides the Contracting Officer's written assessment of the Contractor's performance at the Lawrence Berkeley National Laboratory (LBNL, or Laboratory) under contract DE-AC03-76SF00098 (Contract 98) and for the balance of Fiscal Year 2005 under contract DE-AC02-05CH11231 (Contract 31). The contract Appendices F (Contract 98) and B (Contract 31) define the Objective Standards of Performance agreed to by DOE and the University of California (Contractor or UC) to measure the Contractor's overall annual performance of Laboratory Leadership, Operations and Administration, Science and Technology/Programmatic performance under the contract.

Performance Period

This Annual Evaluation and Appraisal is for the period from October 1, 2004, through September 30, 2005 (Fiscal Year 2005) and encompasses two different contracts. Contract DE-AC03-76SF00098 which was in effect through May 31, 2005, and contract DE-AC02-05CH11231 which was in effect from June 1, 2005 through September 30, 2005.

Contract DE-AC03-76SF00098, Appendix F - Objective Standards of Performance

This document provides the Contracting Officer's Fiscal Year 2005 evaluation and validation of the Contractor's self-assessment of performance in its management and operation of LBNL for DOE under the contract. In this contract, UC and DOE have agreed to use a performance-based management system for Laboratory oversight. The parties agreed to use clear and measurable, objective performance measures as standards against which the Contractor's overall performance in Laboratory Leadership, Science and Technology, and Operations and Administration under the contract will be assessed and evaluated. DOE and UC also agreed that UC would conduct an ongoing self-assessment process, including self-assessments done by the Laboratory, as the principal means by which the Contractor would evaluate compliance with the performance objectives contained in Appendix F.

DOE BSO conducts validations of the Contractor's self-assessment and evaluates the Contractor's performance. The validation effort is conducted by teams that are responsible for the various functional areas represented in Appendix F. These teams, with guidance from DOE BSO management, are responsible for 1) developing an adequate, independent basis for assessing the quality, credibility, and accuracy of the Contractor's self-assessment; and 2) establishing a basis for DOE's evaluation of the Contractor's performance.

This report fulfills the requirements of the contract (Appendix F), and specifically supports and meets the contract requirements of Clauses 2.6 and 5.3 to:

- Provide a summary of the results from the conduct of the DOE BSO validation program and evaluation of performance of work;

- Provide a written assessment of the Contractor's performance under the contract based upon the DOE BSO appraisal program, and the Contracting Officer's evaluation of the Contractor's self-assessment; and
- Provide the basis for determination of the Contractor's Program Performance fee.

Contract DE-AC02-05CH11231, Appendix B – Performance Evaluation Measurement Plan

This document provides the Contracting Officer's Fiscal Year 2005 evaluation of the Contractor's performance in its management and operation of LBNL for DOE under the contract. In this contract, UC and DOE have agreed to use a comprehensive performance-based management system for Laboratory management. The parties agreed to use objective performance measures as standards against which the Contractor's overall performance in the science and technical mission obligations under the contract will be assessed and evaluated. DOE and UC also agreed that UC would conduct an ongoing self-assessment process, including self-assessments done by the Laboratory, as the principal means by which the Contractor would evaluate compliance with the contract statement of work and the performance objectives contained in Appendix B.

DOE BSO conducts validations of the Contractor's self-assessment and evaluates the Contractor's performance. The validation effort is conducted by teams that are responsible for the various functional areas represented in Appendix B. These teams, with guidance from DOE BSO management, are responsible for 1) developing an adequate, independent basis for assessing the quality, credibility, and accuracy of the Contractor's self-assessment; and 2) using information gathered in addition to the self assessment through operational awareness, peer reviews, outside agency reviews and for cause reviews conducted by DOE, for establishing a basis for DOE's evaluation of the Contractor's performance.

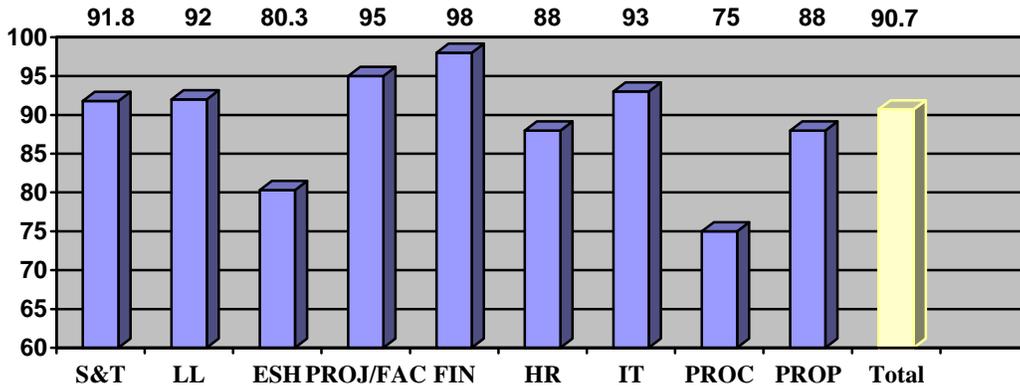
This report fulfills the requirements of the contract (Appendix B), and specifically supports and meets the contract requirements of Clause H.14 to provide an annual written assessment of the Laboratory's performance and also provides a basis for the determination of fee earned required by Clause I.82.

FY 2005 Appraisal Results in Brief

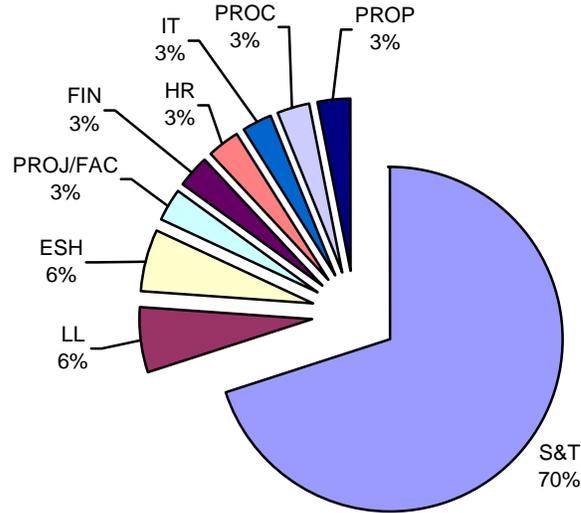
A. Overall Results FY 2005

DOE rates the overall performance of LBNL as **Outstanding** for FY 2005.

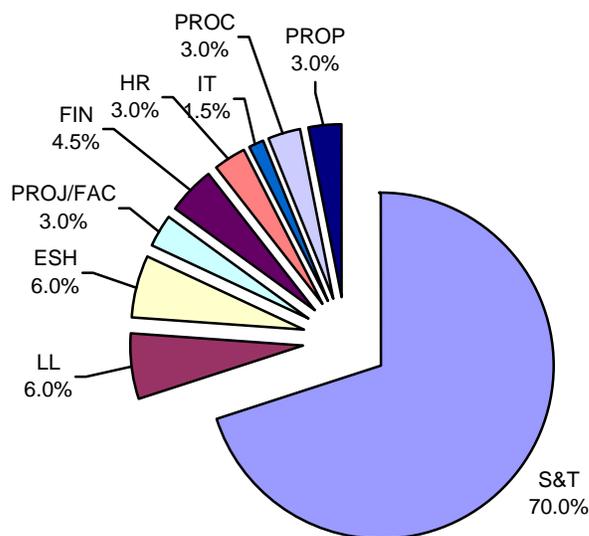
A.1 RATING SUMMARY



A.2 WEIGHTING SUMMARY



Area Weight Contract "98"



Area Weight Contract "31"

B. Science and Technology

The overall FY05 S&T rating is decremented 0.6%, from 92.4% to 91.8% (score reduced from 646.8 to 642.6 points), due to a case of scientific misconduct in part of the FY05 work funded by NNSA Nonproliferation and Verification Research and Development program. This reduction takes into consideration the funding level of the affected work, and the fact that LBNL identified and appropriately responded to the incident.

Basic Energy Sciences

The LBNL Basic Energy Sciences (BES) program performance is rated overall as **Outstanding** at 92.8% in FY 2005. In the Materials and Engineering Physics program, the Electronic Materials Program continues to be world-class, extremely productive, and imaginative. Materials Chemistry projects in carbon nanotubes, nanocrystals for solar energy conversion, and nuclear magnetic resonance (NMR) instrument and technique development are world-class. Peer reviews in FY 2005 provided confirmation of the outstanding nature of the science in all programs supported by BES Chemical Sciences, Geosciences, and Biosciences Division. The Materials Sciences and Engineering program at LBNL is very responsive to the Department's mission in basic science, and provides a strong underpinning to mission needs and applications in ceramics, electronic materials, and nanotechnology. The five-year strategic plan for the Advanced Light Source (ALS), developed under the leadership of Daniel Chemla, has been accomplished, and BES considers the ALS to be a model for how a user facility should operate. The National Center for Electron Microscopy (NCEM) at LBNL is a flagship user facility for high-resolution electron microscopy and related electron scattering techniques. Progress on the Molecular Foundry, a Nanoscale Science Research Center, has continued to be outstanding.

High Energy Physics

Lawrence Berkeley National Laboratory's (LBNL's) overall performance rating in the High Energy Physics (HEP) program for FY2005 is **Outstanding** at 90.7%. LBNL continues to play an important role in the national HEP program, and the quality of its technical capabilities and work remains high and is of great benefit to the HEP community. It is an international leader in the development of advanced detector and other technologies pertinent to the field, including world-record setting magnets for accelerated beams. The laser acceleration laboratory continues to demonstrate progress in the high-gradient acceleration of electron beams by laser-driven plasma wakefields. LBNL has concentrated on high priority topics such as LHC detector apparatus (ATLAS), Dark Energy studies, and ongoing major collider programs (Collider Detector at Fermi (CDF) and BaBar (B Meson) detector at SLAC).

Nuclear Physics

Lawrence Berkeley National Laboratory's (LBNL's) overall performance rating in the Nuclear Physics (HEP) program for FY2005 is **Outstanding** at 93.5%. The researchers in LBNL's Nuclear Science Division produce high quality scientific results at a sustained rate in a number of focused areas. The Laboratory continues to make critical experimental and theoretical contributions to the the Relativistic Heavy Ion Collider (RHIC) Solenoidal Tracker at RHIC (STAR) experiment at the Brookhaven National Laboratory. LBNL researchers are among the research leaders in neutrino physics, playing a substantial collaborative role in the Sudbury Neutrino Observatory experiment, and leading the United States collaborators in the Kamioka Liquid scintillator Anti Neutrino Detector (KamLAND) experiment in Japan. LBNL scientists remain world leaders in the research and development of program-relevant technologies including gamma-ray spectrometers with segmented germanium crystals, and electron cyclotron resonance (ECR) ion sources (e.g., the Versatile ECR Ion Source for Nuclear Science - VENUS).

Computing Sciences

The LBNL Computer Science program performance is rated overall as **Outstanding** at 95.0% in FY2005. LBNL's computer science program is widely recognized for its strengths, particularly in performance analysis, programming models, and system software. The work done by LBNL is outstanding and the contribution to the Mathematical Information Computational Sciences (MICS) program in the respective project areas is very valuable. During FY2005, the Energy Sciences Network (ESnet) was aggressive in developing and pursuing a plan to migrate the architecture of the network, to meet demands of the scientific community that are projected over the next decade. In the Applied Mathematics program, the Contractor meets the standard of performance for all metrics, except the "Programmatic Performance and Planning" metric where the contractor exceeds the standard of performance. LBNL fully supports the partnering across science and technology programs and provides effective championing of this goal within the broader community.

Fusion Energy Sciences

The LBNL Fusion Energy Sciences (FES) program performance is rated overall as **Outstanding** at 92% in FY 2005. The quality of science produced by the group at Lawrence Berkeley National Laboratory (LBNL) on heavy ion beam science is outstanding. The first (NCDX-1) compressed an intense, space-charge dominated ion beam pulse by an unprecedented factor of 50, offering the potential to substantially reduce the cost of dense-plasma physics experiments and future Inertial Fusion Energy (IFE) drivers. The program leadership was outstanding in redirecting the program towards applications in High Energy Density Physics (HEDP). The LBNL group made outstanding improvement in

programmatic planning, in establishing programmatically effective milestones, in formulating the task plans, and in the execution of the task plans. The program leadership is to be specially commended for maintaining an exceptional high morale, in the face of continual funding uncertainties and outlook for FY 2006.

Biological and Environmental Research

Lawrence Berkeley National Laboratory's (LBNL's) overall performance rating in the Biological and Environmental Research (BER) program for FY2005 is **Outstanding** at 94.3%.

LBNL continued to conduct high quality, well-managed science across all areas of the Biological and Environmental Research (BER) program and received an overall FY2005 rating of Outstanding at 94%. It manages and operates a highly successfully DNA sequencing user facility and program at the Joint Genome Institute (JGI). It leads a diverse and productive set of Genomes to Life (GTL) projects. LBNL excels in providing new synchrotron-based instrumentation for structural biology research, such as developing a new x-ray microscopy beamline at the Advance Light Source (ALS). LBNL has a core of leading scientists performing outstanding research in nuclear medicine and low-dose radiation research. The Laboratory is conducting innovative carbon-cycle research that is producing results related to the fundamental soil carbon transformation mechanism relevant to terrestrial carbon sequestration. LBNL also provides outstanding management of Natural and Accelerated Bioremediation Research (NABIR) program office.

Energy Efficiency and Renewable Energy

The overall rating for Energy Efficiency and Renewable Energy is **Excellent** at 84.6%. Lawrence Berkeley National Laboratory (LBNL) achieved significant results through the further development and refinement of the White Roofs initiative.

In windows research, the science learned from this applied project will also potentially offer significant breakthroughs in other glass coating and related applications. The mid-year success of this project and relationship to the FY 2006 Joule Target were considered so valuable that they resulted in the competitive award to accelerate and expand this project.

For both the Digital Controls for Lighting and the Lighting Simulation Toolbox projects, LBNL management has failed to recognize the present focus areas of the Lighting Research and Development (LR&D) program and adjust these projects accordingly.

LBNL is also a major contributor to the FreedomCar and Vehicle Technologies Program (OFCVT).

LBNL is lauded by Industrial Technologies Program (ITP) private sector partners, for timeliness and accuracy in its delivery of energy management best practices. They have been a major contributor to the delivery of near-term energy efficiency practices to the industrial sector, and have been central to the energy savings achieved by industry as a result of ITP efforts. LBNL has provided important assistance to the ITP Technology Delivery subprogram.

LBNL has improved on the FY 2004 issue of high uncostered balances and delays in work on several projects, including the highly insulating window project

Investigators at LBNL are widely recognized by persons in the battery R&D community, as among the leading experts in battery and electrochemical technology.

Civilian Radioactive Waste Management

The overall FY2005 performance of Lawrence Berkeley National Laboratory (LBNL) in the Office of Civilian Radioactive Waste Management (CRWM) program is rated as **Outstanding** at 90%. LBNL provided outstanding support for the Yucca Mountain Project Office of Science & Technology in both the quality of its science and in achieving programmatic goals for the project. LBNL's science has been excellent, with few problem areas. The Laboratory consistently demonstrates an understanding of projects and reacts well under pressure.

Fossil Energy

The overall FY 2005 performance of Lawrence Berkeley National Laboratory (LBNL) in the Office of Fossil Energy (FE) program is rated as **Outstanding** at 90%. LBNL provided outstanding technical support to the Texas Frio brine study project, and served as an important team member in this carbon sequestration project's consortium.

Office of Electrical Delivery and Energy Reliability (OE)

The overall FY2005 performance of Lawrence Berkeley National Laboratory (LBNL) in the Office of Electrical Delivery and Energy Reliability (OE) program is rated as **Outstanding** at 90%.

This rating results from LBNL's excellent response in supporting the Department of Energy (DOE) in marshalling resources to integrate blackout recommendations into proposed R&D plans for the Transmission Reliability program; performing original work and publishing key finding on analytical methods to detect market power on the electric power system; and providing outstanding management of Consortium for Electric Reliability Technology Solutions (CERTS) resources to support the Transmission Reliability program through program reviews and planning, and the DOE's mission to implement the National Energy Policy.

C. Laboratory Leadership

FY 2005 Overall Performance Summary

Lawrence Berkeley National Laboratory's (LBNL) overall Laboratory Leadership rating for FY 2005 is **Outstanding** at 92%.

LBNL Director Steven Chu established a new leadership team for the Laboratory that, together with University of California (UC) leadership, successfully competed for the LBNL contract. New contractor assurance organizations have been formed to support the management of the Laboratory and its contract: a UC LBNL Advisory Board, a UC Contract Assurance Council and an LBNL Institutional Assurance Office (IAO).

The Laboratory's plans and directions remain well-aligned with the Strategic Plans of the Department of Energy (DOE) and the Office of Science (SC). LBNL continues to be an innovative source of initiatives for frontier research opportunities across a broad range of SC and DOE programs. LBNL also remains successful in sustaining a diverse portfolio of non-DOE sponsored research (Work for Others) that complements DOE work, helps to sustain core competencies, and comprises over one-fourth of the Laboratory's annual operating budget. Laboratory strategic research planning is integrated with planning for facilities and infrastructure, information technology, and best practices operational and business systems. The Laboratory developed a five-year *Business Plan* that was reviewed by SC's leadership in May 2005, and which is the basis of a 5-Year Plan for LBNL (FY2006-10) being submitted to Congress.

LBNL recognizes and pursues opportunities stemming from the interdependencies between different programs, leveraging a key Laboratory strength. Under Dr. Chu's leadership, the Laboratory has embarked on an initiative for the conversion of solar energy to chemical fuels (Helios). It is utilizing the Laboratory's broad basic research capabilities and unique resources to develop a carbon-neutral energy source and fusing the execution of DOE's science and energy missions.

The Laboratory continued proactive programs for Communications, Community Relations, Science and Engineering Education outreach (locally and nationally), and Diversity. LBNL realized high-level visibility in FY 2005 with site visits by Secretary of Energy Bodman, California Governor Schwarzenegger, and several members of Congress. Laboratory tours grew to sixty in FY 2005 for nearly 1500 people. The Laboratory's Center for Science and Engineering Education (CSEE) continues to be a model program that provides science, engineering and mathematics educational experiences in several programs for over 500 students and teachers. It is linked with the Laboratory's Diversity Program, helping to develop a diverse pipeline for the future workforce. Diversity remains a component of the Laboratory's Performance Review and Development (PRD) process for all employees.

UC provided Laboratory leadership with training on the key provisions of the new contract. The new Institutional Assurance Office (IAO) is responsible for assuring the implementation of all contract requirements, tracking the implementation of UC proposal initiatives, consolidating and managing corrective actions from all sources, supporting leadership decision-making for resource allocations, and setting and ensuring the use of common project management practices throughout the Laboratory. LBNL is in the process of receiving Office of Engineering and Construction Management (OECM) certification of its Earned Value Management System (EVMS), based on its successful application on the Molecular Foundry construction project. The Foundry is slightly ahead of schedule and under

budget. It will commence operations as a new national user facility in 2006, and ~\$1.4M in unused project contingency is enabling the purchase of additional capital equipment for the opening facility.

LBNL's Chief Financial Officer (CFO) organization continues to be strengthened: key management positions were filled with new employees (Budget Officer, Controller, Procurement and Property Officer); a new financial policies and procedures manual was developed compliant with DOE, UC and regulatory requirements; and improvements made to web-based financial systems software. Laboratory leadership is continuing to take assertive actions to address the increase in safety incidents that occurred in the 2nd and 3rd quarters of FY2005. It appears to be working; although the Laboratory missed meeting SC's target for the year (Total Recordable Cases (TRC) of 1.65 vs. the goal of 1.17), the normalized rate for the 4th quarter was under the target (1.02). The Laboratory's performance rating under its stewardship and accountability criterion was decremented from its otherwise outstanding rating by lower than expected performance in safety management, procurement issues and the delay in selecting a permanent replacement, and lack of consistency in the routine management meetings with BSO. LBNL sustains a well-regarded, vanguard cyber security program.

FY 2005 Program Results Highlights

- Basic Energy Sciences (BES)
 - Molecular Foundry – Construction nearly completed. Project under budget and ahead of schedule.
 - Transmission Electron Aberration-corrected Microscope (TEAM) project at the National Center for Electron Microscopy (NCEM) received SC approval of CD-1 (Preliminary Baseline Range) in September 2005.
 - Advance Light Source (ALS) “Top-Off Mode” upgrade conceptual design successfully reviewed and implementation initiated.
 - Helios Solar to Fuels Initiative launched as a strategic institutional thrust.
- Biological and Environmental Research (BER)
 - Joint Genome Institute transition to a user facility: second year of the Community Sequencing Program, strengthening planning and operations. Over 30B base-pairs sequenced in FY 2005. The global leader in microbial sequencing.
 - Berkeley West Biosciences Center (Potter St.) established, housing ~200 LBNL program staff, including lead elements of the Physical Biosciences Division.
 - Three of six new GTL awards made to teams led by LBNL principal investigators.
- Computing Sciences (ASCR)
 - Planned upgrades for the National Energy Research Scientific Computing Center (NERSC) and the bandwidth of the Energy Sciences Network (ESnet) are proceeding on schedule:
 - The NERSC V system undergoing acquisition, with award planned in FY 2006.
 - A second New Computing System (NCS-b) 888-processor “Bassi” was procured, installed, and is exceeding expectations during initial testing. Its performance is comparable to the main “Seaborg” system, which has ~7 times as many processors, for directed intermediate scaling applications (~64-256 processor tasks).
 - Second round of awards made for the Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program at NERSC for large-scale, computationally intensive projects.

- High Energy Physics (HEP)
 - Supernova Acceleration Probe (SNAP) – Proposal under development in response to the National Aeronautics and Space Administration’s (NASA) Request for Proposal (RFP) for a Joint Dark Energy Mission (JDEM). The SNAP Research and Development (R&D) program produced infrared detectors that meet JDEM specifications in collaboration with industry.
 - Final A Toroidal LHC Apparatus (ATLAS) detector components were delivered to the Large Hadron Collider (LHC) at CERN, the European Consortium for Nuclear Research, and are being installed.
 - The L’Oasis laser wakefield acceleration lab propagated centimeter-scale, high-gradient (~100GeV/m) plasma structures that will lead to multi-GeV accelerated electron beams.
- Nuclear Physics (NP)
 - 88” Cyclotron – The Memorandum of Agreement (MOA) with Air Force/National Reconnaissance Office (NRO) was extended to 2011 and will enable operations to continue for nuclear structure, heavy element and space effects research.
 - Gretina Detector – SC approved CD-2a/3a (Performance Baseline/Long-Lead Procurement) in June 2005. Long-lead procurements commenced.
 - Versatile ECR Ion Source for Nuclear Science (VENUS) Electron Cyclotron Resonance (ECR) source was commissioned, and is being tested for the Rare Isotope Accelerator (RIA) front-end.
- Fusion Energy Sciences (FES)
 - Neutralized Drift Compression Experiment (NDCX-1) achieved an unprecedented fifty-fold compression of intensely charged ion-beam pulses.

Operations Results Highlights

- New LBNL Contract
 - A new Institutional Assurance Office was established and staffed. It manages contract requirements, monitors the implementation of contract proposal initiatives, institutes laboratory project management systems, consolidates and tracks all corrective actions lab-wide, and helps ensure strong operational performance.
 - UC briefed LBNL leadership on key provisions of the new contract, and changes from the previous contract including strong new incentives and potential penalties.
- Facilities and Infrastructure
 - Bevatron: Plans were drafted and the California Environmental Quality Act (CEQA) process initiated for full demolition start in FY 2006.
 - The updated site-wide facilities seismic safety survey progressed, and SC approved CD-0 for a Phase 1 of seismic rehabilitations (for Buildings 50 and 74) as an FY 2007 start under the Science Laboratory Infrastructure (SLI) program.
 - Plans were advanced for alternatively financed facilities. DOE approved the Mission Need Statement for the Computational Research and Theory (CRT) facility. A Berkeley Guesthouse (user lodging facility) is also in planning.
- Environment, Safety and Health (ES&H)

- LBNL's average FY2005 Total Recordable Cases (TRC) rate of 1.70 missed the SC goal of 1.17, and the Days Away, Restricted or Transferred (DART) rate was 0.64, above the SC goal of 0.5. Strong senior management action and focus on safe work performance reversed the increase in incidents that occurred in early months of 2005, but it remains to be seen whether or not this improvement can be sustained in FY 2006.
- Business Management
 - The Chief Financial Officer's organization was strengthened with a new Budget Officer, Controller, Procurement Officer, and Property Manager. Financial systems were upgraded to a new web-based system, and training and process improvements are underway.
- Information Technology (IT) and Cybersecurity
 - Planned improvements were implemented in cyber security, financial management, email, networking, and DOE compliance reporting.
 - LBNL implements a vanguard intrusion detection system that protects IT assets; yet allows it to remain an open, vital scientific institution. Components of the program are being adopted by other DOE organizations and by security agencies.
- A "Balanced Scorecard" process is continuing under the new contract. It measures the performance of all operations units from multiple, common perspectives, and systematically promotes continuous improvements.

D. Operations and Administration

ENVIRONMENT, SAFETY, AND HEALTH

Lawrence Berkeley National Laboratory (LBNL) overall Environment, Safety, and Health (ES&H) performance is rated as **Excellent** at 80.3%.

The FY 2005 performance metrics continue to evaluate LBNL's completion of scheduled milestones to certify/independently validate/accredit ES&H management systems, and to determine the effectiveness of the LBNL Integrated Safety Management System (ISMS) using the Balanced Scorecard. LBNL's performance related in both of these areas declined in FY 2005.

Five of the six systems included in best practices/certified/independently validated programs met their milestones. The Safety Management Program met only one of the three certification milestones due. The Department of Energy (DOE) concludes that the safety staff reductions from previous years may have contributed to the decline in the effectiveness of the safety management program. Although additional resources have been added, however, a thorough assessment of the program would proactively address remaining safety issues, rather than allow lagging indicators set priorities.

ISMS Effectiveness declined in the area of "Do Work Safely". Total Recordable Cases (TRC) and Days Away, Restricted, or Transferred (DART) rates increased and did not meet the goals set by DOE/HQ Office of Science (SC). Laboratory management responded quickly to reverse the trend. However, the rates remain higher than the expected rates.

The LBNL *Safety Culture and EH&S Satisfaction Survey* indicates that the content and frequency of Lessons Learned need improvement. A Lessons Learned Process Improvement Team (PIT) formed early during the performance period has not completed its corrective action plan.

The BSO expectations of LBNL related to improved safety performance are as follows:

1. A path forward for program improvements and certification based on a comprehensive assessment of its safety management program and staffing;
2. Adequate staff and resources are allocated to implement all of LBNL's ES&H programs; and,
3. That the Lesson Learned PIT is completed and the corrective action plan implemented.

Project/Facilities and Construction Management

Lawrence Berkeley National Laboratory (LBNL) activities in the overall Project/Facilities and Construction Management are rated as **Outstanding** at 95.0% for FY 2005.

Physical Assets Planning and Real Property Management: The milestones included Comprehensive Integrated Planning Process, Space Utilization, Assets Condition/Suitability Assessment, Real Property Leases and the population and verification of the Facilities Information Management System (FIMS) and Active Facilities Data Collection System (AFDCS). Facilities Planning significant accomplishments for FY 2005 included the following: 1) Ten Year Site Plans submitted in November 2004 for FY 2004 and May 2005 for FY 2005, and 2) Leases and disposition approvals: Building 977

(Potter Street) Life Science and Physical Biosciences, Building 913 (Greenhouse) Earth Science Division Mesocosm Project and the disposition of Building 29D.

Construction Project Management: The milestones included Project Delivery Costs and Project Work Performed. Facilities Design and Construction significant accomplishments for FY 2005 included the following: 1) Approval of Mission Need CD-0 in June, 2005 for the Seismic and Structural Safety of Buildings, Phase I project. This project will address the seismic and structural safety of two of the highest risk LBNL structures, Buildings 50 and 74; 2) Construction of the Molecular Foundry is nearing completion under budget and a few months ahead of schedule. CD-4a (Start of Initial Operations) is planned for May 2006, with CD-4b (Start of Full Operations) in December, 2006. The project has employed safety best practices and had a strong safety record; and, 3) An external review of LBNL's Earned Value Management System (EVMS) was conducted with an extraordinarily positive outcome. The team's findings found no corrective actions needed, and recommended that the Laboratory's EVM system be certified.

Facility and Infrastructure Management: The milestones included Utility Service Reliability, Building Energy Usage, Maintenance Program Implementation, Energy Management Plan Goals, and Maintenance Investment Goal: 1.7% of Replacement Plant Value (RPV). Facilities Maintenance and Operations significant accomplishments for FY 2005 included the following: 1) DOE performed RPV validation study in November 2004 and in addition to meeting the DOE standards, DOE Office of Science (SC) and Office of Engineering and Construction Management (OECM) stated that LBNL's process was a "best business practice". The new RPV was reduced to \$650,000,000; 2) Exceeding the FY 2005 DOE Maintenance Invest Index Goal of 1.7%; and, 3) Energy use reduction continues to exceed DOE Order 430-2A in FY 2005.

Financial Management

The Lawrence Berkeley National Laboratory (LBNL) received an overall rating in the Financial Management area of **Outstanding** at 98%. Substantial progress resolving the issues from FY 2004, additional internal control measures, and the implementation of the new DOE financial system Standard Accounting and Reporting System (STARS) equated to an overall Outstanding rating for Laboratory performance against the FY 2005 performance measures.

The Office of the Chief Financial Officer (OCFO) successfully implemented several strategies to strengthen controls, accountability, and effective financial management practices during the year. Specifically, more emphasis was placed on establishing processes and safeguards to mitigate issues that occurred in FY 2003 and FY 2004.

Special recognition should be given to the CFO's staff for working very hard to implement Department of Energy (DOE) initiatives, along with executing the transition plan from Contract 98 to Contract 31. DOE initiatives implemented this year include:

- Standard Accounting and Reporting System (STARS)
- Funds Control Distribution System (FCDS)
- Electronic Portfolio Management Environment (ePME)
- Energy Efficiency and Renewable Energy Program monthly reporting

The implementation of STARS has been an especially difficult transition. STARS required the CFO staff to endure numerous changes and revisions in their processes for submitting their costs, and

significant delays in receiving their monthly contract modification. These situations often required the CFO's staff to produce their monthly financial reporting in a shorter timeframe than usually allowed. The implementation of these initiatives was a significant effort, and with the excellent coordination and teamwork between LBNL and DOE, all the financial management transitions were handled as expeditiously as possible.

The increase of staff in the CFO's organization has strengthened core competencies for accountability, control and other enhanced management capabilities. Along with the development of policies and procedures, and enhanced training program, the CFO's staff will be able to more efficiently and effectively maintain its financial management responsibilities.

Human Resources

Lawrence Berkeley National Laboratory (LBNL) has demonstrated **Excellent** at 88% performance in FY 2005, continuing to utilize a standards-based approach in addressing each of the Balanced Scorecard activities. LBNL's accomplishments in FY 2005 include: initiating the multi-year Electronic Process Improvement Project in response to customer feedback to eliminate incompatible databases and overly cumbersome paperwork, closing out internal audit findings, identifying metrics with high potential for relevant analysis of Human Resources (HR) cost efficiency and employee satisfaction, providing ten "CORE" supervisory training courses to over 300 employees, establishing the framework for the Berkeley Laboratory Institute for a much-needed, integrated training and leadership development program, and preparing for participation in the pilot phase of the HR accreditation initiative. In contrast to FY 2004's achievements, FY 2005 was a year of new initiatives, in which Balanced Scorecard activities involved analysis against standards and the identification of necessary actions, several of which are quite complex. There were a few setbacks, in which ambitious targets were pushed back, or benchmark data didn't prove to be adequate, however, the Laboratory placed the Balanced Scorecard as a high priority and made excellent progress under each of the activities. In addition the Laboratory was able to initiate an additional activity in developing a succession planning element to its Performance and Salary Review process.

Information Technology Management / Cybersecurity

In FY 2005, Lawrence Berkeley National Laboratory (LBNL) Information Technology Management / Cybersecurity achieved an overall rating of **Outstanding** at 93%. They completed the major task to obtain the Authority to Operate (ATO) before the deadline which was on an accelerated schedule.

Procurement

The Lawrence Berkeley National Laboratory (LBNL) Procurement, measured against the objective standards in Appendix B, earned a rating of **Good** at 75% for FY 2005.

During this rating period, LBNL committed to develop a new self assessment program and a supplier management program. Both programs are critical to assess the health of the Procurement Department. The self assessment program is a sound approach; however, it was not finalized until September 20, 2005 making it impossible for the Department of Energy (DOE) to assess the overall effectiveness of its deployment and results.

Timeliness and quality of reports are areas of concern. Information is the basis for problem solving and decision making. The information provided the Contracting Officer was constantly changing and

reports were finalized after 3-4 months. It became evident that management was not able to manage deliverables in an effective manner.

Property Management

In Property Management, numerous areas changed ranging from appraisal by a Balanced Scorecard Model, to staff changes and a new manager. Corrective actions and new plans for improvement were put in place. The Integrated Evaluation Report, in areas selected for validation, found in its Property Letter Report for 2005 “adequately, accurately and objectively addresses performance measures covered by the DOE Contract”. For its efforts in these regards, for FY 2005, Lawrence Berkeley National Laboratory (LBNL) Property Management achieved an overall rating of **Excellent** at 88%.

Additional Observations

Nuclear Physics

The Nuclear Physics program is supportive of LBNL's proposal to continue operations of the 88-Inch Cyclotron for the U.S. Air Force, National Reconnaissance Office and the DOE Nuclear Physics programs, and a Memorandum of Agreement has been reached between the Office of Science and the Department of Defense to operate the facility through FY 2011 assuming funding resources are available. The LBNL nuclear physics initiatives in neutrino studies, heavy ion studies at both RHIC/BNL and LHC/CERN and spin-physics studies at RHIC all have merit and build on LBNL core competencies. Whether some or all of these will be supported will depend upon what the funding levels of the Nuclear Physics program will be in the out years and their scientific priority in the context of available resources. Nuclear Science Division management and scientists should work with the Office of Nuclear Physics in the development of these initiatives.

Energy Efficiency and Renewable Energy

The organizational structure for appliance standard work seems to be less than ideal with FTEs spread over multiple individuals. Efforts are diluted due to a high number of workers under a single task, impacting quality in a non-positive matter. Laboratory project managers need to be held accountable and do more than just manage their laboratory people. Process improvement or lessons-learned from previous work experience is lacking from this organization

Biological and Environmental Research

The following are recommendations to improve the impact of LBNL and BER science, and are not intended as concerns or programmatic issues.

1. Recommend that GTL projects continue to serve as leaders in the program by working with other GTL projects and scientists to develop strategies and approaches for common data standards, data sharing and data analysis for key aspects of the GTL program.
2. Recommend that the JGI/PGF continue to interact with the scientific community to develop or identify strategies for high throughput DNA sequence analysis methods that scale with the remarkable and rapidly increasing throughput capacity for DNA sequencing.
3. Recommend that low dose scientists strive to continue articulating the value and utility of their science to radiation risk policy.
4. The carbon cycle research program needs to give attention to technology applications of its findings, e.g. for carbon sequestration and to monitoring components of the Climate Change Technology Program.

SCIENCE AND TECHNOLOGY

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Science and Technology / Programmatic Performance

The DOE Office of Science will perform and document an appraisal of the Science and Technology performance of the Laboratory. The appraisal will use, but not be limited to, the Science and Technology Assessment Criteria outlined below. The Contractor will continue to use external peer reviews to provide advice to internal management on the overall quality of the technical work, the effectiveness of Laboratory management in fostering an atmosphere conducive to scientific inquiry, and other aspects affecting the ability of the Laboratory to continue to respond effectively to the DOE's mission.

The overall rating of the Science & Technology programs is **Outstanding** at 91.7% for FY 2005.

Criteria 1: Quality of Science

Recognized indicators of excellence, including impact of scientific contributions, leadership in the scientific community, innovation and sustained achievement will be assessed as appropriate. As appropriate, other performance measures such as publications, citations, and awards may be considered. This criterion is to be applied to all aspects of technical work, including science, engineering, and technical development.

Criteria 2: Relevance to National Needs and Agency Missions

The impact of Laboratory research and development on the mission needs of the Department of Energy and the nation will be assessed in the reviews. Such considerations include energy policy, economic competitiveness, and national environmental goals, as well as the goals of DOE and the nation in advancing fundamental science and strengthening science education. The impact of Laboratory programs on industrial competitiveness and national technology needs will be assessed. The assessment will include characteristics that are not easily measured, including relevance of research programs to national technology needs and effectiveness of outreach efforts to the industry. As appropriate, they may also consider such performance measures as licenses and patents, collaborative agreements with industry, and the value of commercial spin-offs.

Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities and User Resources

Performance measures include success in meeting scientific and technical objectives, technical performance specifications, and user availability goals. Other considerations may include the quality of user science performed, extent of user participation and user satisfaction, operational reliability and efficiency, and effectiveness of planning for future improvements, recognizing that DOE programmatic needs are considered to be primary when balanced against user goals and user satisfaction.

Criteria 4: Program Management and Planning

The assessment should focus on broad programmatic goals, including meeting established technical milestones, carrying out work within budget and on schedule, satisfying the sponsors, providing cost-effective performance, planning for orderly completion or continuation of the programs, and appropriate publication and dissemination of scientific and technical information. In assessing the effectiveness of programmatic and strategic planning, the reviewers may consider the ability to execute projects in concert with overall mission objectives, programmatic responsiveness to changes in scope or technical perspective, and strategic responsiveness to new research missions and emerging national needs. In the evaluation of the effectiveness of program management, considerations include morale, quality of leadership, innovation in providing for interdisciplinary approaches to achieving scientific breakthroughs, effectiveness in managing scientific resources (including effectiveness in mobilizing interdisciplinary teams), efforts to maintain and enhance the laboratory's key competencies, effectiveness of organization, employee morale, and efficiency of facility operations.

Performance Area: Basic Energy Sciences

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| Overall Performance Rating: Outstanding |
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| Criteria 1: Quality of Science: Rating: Outstanding |
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- The Materials and Engineering Physics program supported by the BES Materials Sciences and Engineering Division at LBNL was peer reviewed on site in FY 2004. The Electronic Materials Program continues to be world-class, extremely productive, and imaginative. Some of the more technological and applications-oriented aspects of the Ceramics Program have been phased out, and the program continues to evolve in the direction of bio-inspired nanoscale ceramics. Several new activities, including the Synthesis and Control of Molecular Machines and the Mechanics, Dynamics and Assembly of Soft and Hard Nanomaterials are well underway and have strong performance. While the reviewers were highly complimentary on some components of these new activities, they also cautioned the need for improved coherence within the two new programs.
- The scientific quality of the condensed matter physics and materials chemistry program is very high. The Materials Chemistry program at LBNL was reviewed on February 8-10, 2005. Included among the projects supported in Materials Chemistry are world-class projects in carbon nanotubes, nanocrystals for solar energy conversion, and Nuclear Magnetic Resonance (NMR) instrument and technique development. A very promising project in "Plastic Electronics" has been initiated.
- The BES Chemical Sciences, Geosciences, and Biosciences Division supports research at LBNL that includes Photochemistry and Radiation Sciences, Chemical Physics, Atomic, Molecular, and Optical (AMO) Physics, Heavy Element Chemistry, Catalysis, Geosciences, and smaller programs in Chemical Energy and Chemical Engineering, and Separations and Analysis. All programs are generally "world-class" and widely recognized. Peer reviews in FY 2005 provided confirmation of the outstanding nature of the science in all programs. New funding was provided for a well-conceived and scientifically important integrated Ultrafast X-ray Science Laboratory, as part of the AMO Physics program.

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| Criteria 2: Relevance to National Needs and Agency Mission Rating: Outstanding |
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- The Materials Sciences and Engineering program at LBNL is very responsive to the Department's mission in basic science and provides a strong underpinning to mission needs and applications in ceramics, electronic materials, and nanotechnology. LBNL has been a leader in formulating new applications and research in nanoscale materials, with programs in areas such as buckyballs, nanotubes, and photoconversion.
- The Chemical Sciences, Geosciences, and Biosciences programs at LBNL contribute directly to the mission of the Department. For example, the new Ultrafast X-ray Science Laboratory brings together scientists in two LBNL Divisions and the ALS, to coordinate experimental and theoretical

research involving ultrashort x-ray pulses generated by table-top, laser systems and the femtosecond beamline at the ALS.

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| <p>Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities Rating: Outstanding</p> |
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- Progress on the Molecular Foundry, a Nanoscale Science Research Center, has continued to be outstanding. The project proceeded with extensive physical construction and procurement of special technical equipment in FY 2005, and remains within budget and on track for completion on or ahead of schedule. Multiple Office of Science status reviews in FY 2005, validated the progress on the project and found it to be well-managed with no significant issues.
- The National Center for Electron Microscopy (NCEM) at LBNL, is a flagship user facility for high-resolution electron microscopy and related electron scattering techniques. Research accomplishments in FY 2005, included high-profile publications on the atomic-scale structure of defects and interfaces, on surface imaging, and on electron-beam tomography. NCEM is the lead organization on the multi-laboratory Transmission Electron Aberration-corrected Microscopy (TEAM) project, which is developing the technology platform for the next generation of electron scattering instruments. The initial instrument built on this platform will be optimized for high resolution and three-dimensional tomography, and will be installed at LBNL within the NCEM as part of the TEAM project and made widely available to users. The TEAM effort passed the Critical Decision 1 milestone late in FY 2005 and is progressing satisfactorily, in accordance with preliminary milestones.
- The BES Division of Scientific User Facilities performed an on-site peer review of the Advanced Light Source (ALS), in May 2005. The facility received very high marks for its operational reliability and scientific output. The superconducting superbend magnet beamline implementation has been impressive and a main contributor to a significant increase in ALS high-profile publications and access to the user community. Beamline and accelerator improvements have been carefully planned by the ALS with full user participation. The five-year strategic plan the ALS developed under the leadership of Daniel Chemla has been accomplished, and ALS management, led by Janos Kirz, has formulated the next five-year strategic plan. Overall, BES considers the ALS to be a model for how a user facility should operate.

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| <p>Criteria 4: Program Management and Planning Rating: Excellent</p> |
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- Management of the Materials Science and Engineering program at LBNL has improved in its responsiveness to BES requests and its cooperation with BES management. It is credited with initiating new projects in Plastic Electronics and in Quantum Materials, by converting several existing projects and adding new investigators in their formation. The effort of the management to continue improving the coherence of the program is applauded. The management also made progress to address the issues of some of its senior investigators being slow to respond to BES requests to perform peer reviews of materials research proposals, and their late submission of review documents for on-site reviews.

- Management of the LBNL Chemical Sciences Division has been very responsive in the formulation and implementation of a sensible management plan for the newly funded Ultrafast X-ray Science Laboratory (UXSL). In addition, they have selected a talented, energetic, and dedicated director for the UXSL who has displayed the ability to coordinate the experimental and theoretical programs spanning two LBNL Divisions and the ALS. The future success of the UXSL is critically dependent on the integration of these efforts into a cohesive and coherent laboratory. The initial steps in that direction are very positive.

Performance Area: High Energy Physics

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| Overall Performance Rating: Outstanding |
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| Criteria 1: Quality of Science |
| Rating: Outstanding |

Lawrence Berkeley National Laboratory (LBNL) is actively involved in the preparations for physics analysis with the ATLAS detector. LBNL contributions to BaBar (B mesons) and Collider Detector at Fermi (CDF) were recognized as excellent. In particular the work to restructure the BaBar computing system was found to be outstanding. This new system has dramatically decreased the time needed to perform an analysis of the BaBar data.

The quality of the science being accomplished by the Supernova Cosmology Project and Nearby SuperNova Factory, as well as the quality of the technology development of the SuperNova Acceleration Project (SNAP) was uniformly praised. Their strong Detector Technology Development Program is providing the tools to do the frontier measurements in cosmology. The extended red response charged-coupled devices (CCDs) developed for the SNAP effort are being picked by other groups, including the Dark Energy Survey led by Fermilab (FNAL).

The LBNL theory group is small but strong. The group's strength results from several factors. The group has close connections to experiment and closely collaborates with the theory group on University of California–Berkeley campus. Their excellent record in training young theorists is evidence for the effectiveness of the group.

Laser Acceleration of Electrons and Superconducting Magnets are world class programs. The beam quality acceleration of electrons in a laser-driven plasma wakefield by the l'Oasis group, has been demonstrated. The Department of Energy (DOE) review committee called the experimental demonstration combined with the theoretical explanation, an extraordinary achievement. The research into and the development of new types of superconducting magnets is outstanding. World records in different magnet geometries and for critical current density in Nb₃Sn, are proof of this.

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| Criteria 2: Relevance to National Needs and Agency Mission |
| Rating: Outstanding |

The LBNL HEP program remains well aligned with DOE missions and goals. They have concentrated on high priority topics such as ongoing major collider programs (ATLAS, CDF, and BaBar) and dark energy studies.

Fairchild Imaging licensed High Restivity (HiRho) CCD technology for near infrared imaging from LBNL was developed for the SNAP proposal, but it is expected that it will be used for applications such as night vision and near infrared fluorescence from biological specimens, in addition to astronomy.

In accelerator technology development, LBNL is one of the world leaders in superconducting magnets, and are actively participating in the Large Hadron Collider (LHC) Accelerator Research

Program. The work on laser acceleration of electrons holds promise to either raise the energy of electron accelerators, or lower the cost to build accelerators for the study of condensed matter physics, biology and other fields.

LBNL hosts the Particle Data Group and strongly participate in Quarknet, both of which are two of the premier outreach efforts in U.S. HEP program.

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| <p>Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities Rating: Outstanding</p> |
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LBNL's participation in U.S. ATLAS construction and research program is outstanding, with the pixel and the software efforts being most notable. LBNL physicists have taken important leadership positions in the international ATLAS collaboration for the pixel construction and the software development.

The LBNL contributions to the LHC accelerator project, the cryogenic feedboxes, have been completed on time and on schedule. The overall LHC accelerator project, which includes FNAL and Brookhaven National Laboratory (BNL) also, has received CD-4A, 97% complete.

LBNL is involved in the planning stages of several projects. SNAP is the largest such effort in the LBNL HEP program, and DOE reviews have found progress in developing the concept to be excellent. The proposal to study neutrino oscillations using electron antineutrinos from a nuclear reactor has not made significant progress in the last year.

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| <p>Criteria 4: Program Management and Planning Rating: Excellent</p> |
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The research program planning by the Physics Division and the Accelerator and Fusion Research Division (AFRD) has been well executed. There have been clear efforts to concentrate on high priority topics and areas where LBNL has strengths. Management has worked hard at developing a consensus among the scientific staff on the selection of priorities, and to a large degree has been successful.

Within the Physics Division Program, the major thrusts have been electroweak symmetry breaking with the ATLAS experiment and cosmology with the Supernova Cosmology Project, Nearby Supernova Factory, SNAP, and cosmic microwave backgrounds. In all of these areas, LBNL expertise in detector construction, electronics and computing are being exploited to give the strongest possible effort. Within the Accelerator & Fusion Research Division (AFRD), the strong thrusts have been laser acceleration, superconducting magnets, and accelerator modeling.

There was a serious miscommunication this year between management of AFRD and the Office of High Energy Physics (OHEP). The fraction of the budget devoted to materials and supplies appeared to be higher than it actually was, due to accounting categories used at the Laboratory. OHEP staff found that budget numbers supplied by AFRD did not support the contention of AFRD management that there was insufficient funding for materials and supplies to carry out their program effectively. This problem was only resolved late in the fiscal year, after repeated attempts at clarification.

Laboratory management may have taken too aggressive an approach for the SNAP proposal for the Joint Dark Energy Mission (JDEM). While the science being pursued by SNAP is compelling, it lies in an area between two funding agencies, DOE and the National Aeronautics and Space Administration (NASA). This has complicated and slowed the process of procuring funding for JDEM. Ramping up a large cadre of physicists and engineers well before OHEP expects to be able to fund SNAP appears unwise, since it diverts funds from other important efforts at LBNL.

Performance Area: Nuclear Physics

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| Overall Performance Rating: Outstanding |
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| Criteria 1: Quality of Science |
| Rating: Outstanding |

The Quality of the Science in the Nuclear Physics program at the Lawrence Berkeley National Laboratory (LBNL) is considered to be **Outstanding**.

The researchers in the Nuclear Science Division at LBNL produce high quality scientific results at a sustained rate in a number of focused areas. These projects are well aligned with many of the goals and milestones of the Nuclear Physics Program. The LBNL researchers are among the leaders in research in neutrino physics, playing a substantial collaborative role in the Sudbury Neutrino Observatory (SNO) experiment, and leading the United States collaborators in the KamLAND experiment. The nuclear chemistry group at LBNL has a sustained effort in the search for and characterization of superheavy elements, and studies of the chemical behavior of the heaviest elements. This group mounts the only substantial effort in the United States in this area, and has recently verified the creation of the element with $Z = 110$. LBNL scientists address selected issues in fundamental symmetries and interactions, including experiments to address the unitarity of the Cabibbo-Kobayashi-Maskawa (CKM) Quark Mixing Matrix. The nuclear spectroscopy group has turned a significant portion of their effort toward structure studies with light ions, in alignment with the program being conducted by Lawrence Livermore National Laboratory (LLNL). Scientists at LBNL continue to be world leaders in research and development of gamma-ray spectrometers with segmented germanium crystals (Gamma-Ray Energy Tracking In-beam Nuclear Array - GRETINA) and of electron cyclotron resonance (ECR) ion sources (Versatile ECR Ion Source for Nuclear Science - VENUS).

The scientific and technical contributions of the Relativistic Nuclear Collisions (RNC) group at LBNL continue to be very significant. Its staff has provided outstanding scientific, technical and management leadership in the Relativistic Heavy Ion Collider (RHIC) Solenoidal Tracker at RHIC (STAR) program. RNC scientists have appeared as lead authors on ~70% of all STAR publications, demonstrating a very high level of productivity, especially in its areas of expertise on bulk properties of matter, short-lived probes and jet suppression in heavy ion collisions. The RNC group has formed a new sub-group that has started to play a key role in the STAR measurement of the gluon helicity contribution to the proton spin. The group has continued to maintain a very active and semi-permanent presence at Brookhaven National Laboratory (BNL) in support of the STAR experiment and its detector upgrade Research and Development (R&D) program – particularly, the Heavy Flavor Tracker (HFT) detector upgrade which should enable the measurement of open charm. The RNC group leads this ambitious and challenging R&D project to build a high resolution pixel vertex detector based on CMOS (Complementary Metal Oxide Semiconductor) technology. RNC scientists are also leading the development of an experimental program that will extend the present hard probes program in the Large Hadron Collider – A Large Ion Collider Experiment (ALICE-LHC). Specifically, the pre-conceptual design of an electromagnetic calorimeter has made significant progress. The Parallel Distributed Systems Facility (PDSF) is the STAR data analysis center operated jointly by the National Energy Research Scientific Computing Center (NERSC) and the RNC group at LBNL. This resource is used by the entire STAR collaboration and it continues to have a tremendous

impact on the collaboration's scientific productivity. Overall, the RNC group is considered to be among the two strongest in the national laboratory Heavy Ion Research Program.

Within the Theory Program, LBNL scientists have had significant impact in relativistic heavy ion physics, providing support for interpretations of STAR data at the Relativistic Heavy Ion Collider (RHIC). No other theory group at any of the national laboratories has had as much impact on the RHIC program as the LBNL group has had. The continuing positive interaction between the theory group and the experimental RNC group greatly enhances the effectiveness of LBNL scientists in the area of RHIC physics. There was also a promising new effort in lattice studies of nuclear interactions, but this component of the research program will end with the imminent departure of one member of the group. The past work on interpretations of RHIC data constitutes a significant achievement of the Nuclear Theory Program, and the planned work is an essential component of the Nuclear Physics research portfolio.

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| <p>Criteria 2: Relevance to National Needs and Agency Mission</p> |
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| <p>Rating: Outstanding</p> |
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The LBNL experimental low energy Nuclear Science Program provides leadership in research areas identified as priorities in the Nuclear Science Advisory Committee (NSAC) 2002 Long Range Plan, including studying the physics of neutrinos, and nuclear structure at the extremes of excitation energy, deformation, and angular momentum and the physics of high energy density matter. The relativistic heavy-ion physics group is providing strong leadership within the STAR collaboration and continues to develop prototypes of a next-generation tracking detector for RHIC.

The Nuclear Physics Program has significant success in scientific discoveries that contribute to DOE's mission to advance the state of knowledge of matter and energy. The recent results from KamLAND and the results over several years from SNO are notable examples of discovery physics leading to a deeper understanding of the world around us. The Nuclear Science Division has embraced the utilization of the 88-Inch Cyclotron for a program of basic science and applied science. The Department of Defense utilizes the 88-Inch Cyclotron to study single event upsets in microelectronics that will be used in space applications. The facility is also used by LLNL for research addressing problems in nuclear security.

Within the Nuclear Data program, a small group of LBNL scientists plays a significant role in the national nuclear data effort that provides evaluated nuclear structure and decay data to the basic research and applied physics communities. The importance of this effort has been recently reaffirmed, as the nuclear data activities are important for counter-terrorism efforts. The leadership role of this Isotope Project group is threatened by an aging group of evaluators and concomitant retirements, without a clear plan for new personnel.

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| <p>Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities</p> |
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| <p>Rating: Outstanding</p> |
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The 88-Inch Cyclotron remains a highly reliable facility, providing high current light ions including protons, as well as heavy ions above the Coulomb barrier to $A \sim 160$. The accelerator has maintained forefront capability through the continual evolution of ECR ion sources, with the latest version, VENUS, utilizing superconducting technology. A new beamline to produce neutrons is being

developed for studies of interest for the National Nuclear Security Agency's (NNSA) Academic Alliance Program. The facility is not longer a national user facility, but supports in-house researchers, users conducting the Department of Defense (DOD) single event upset program, and applied research sponsored by NNSA.

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| Criteria 4: Program Management and Planning Rating: Outstanding |
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The LBNL/University of California (Berkeley) in-house program research program is well targeted. The management has embraced the operation of the 88-Inch Cyclotron for applied research and is committed to carrying it out. In the area of neutrino physics, researchers are at the forefront in carrying out pre-conceptual planning for new experiments. The GRETINA MIE is well planned and is on cost and on schedule.

Relativistic Nuclear Collisions (RNC) Group has provided scientific and technological leadership on the STAR experiment at RHIC that builds on the core competencies of the laboratory, particularly its Engineering Divisions, NERSC and the test facilities at the Advanced Light Source.

Performance Area: Computing Sciences

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| Overall Performance Rating: Outstanding |
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| Criteria 1: Quality of Science |
| Rating: Outstanding |

The computer science program at Lawrence Berkeley National Laboratory (LBNL) is widely recognized for its strengths, particularly in performance analysis, programming models, and system software. Examples of these strengths include the Performance Evaluation Research Center (a Scientific Discovery through Advanced Computing (SciDAC) Integrated Software Infrastructure Centers (ISIC) focused on analyzing and improving application performance, the Unified Parallel C, programming model project, the DOE Advanced Computational Software (ACTS) outreach effort, and the Scientific Data Management Center). All of these areas of activity have made substantial progress and contributions.

As an “indicator of excellence”, National Energy Research Scientific Computing Center (NERSC) increased the usage by runs using > 512 processors from < 45% in FY 2004 to 68% in FY 2005, as compared to the Office Management Budget (OMB) performance measure of 40.

LBNL has been actively involved in a number of technology Research and Development (R&D) projects and National Collaboratory program under DOE 2000 program. The work done by LBNL is outstanding and the contribution to the Mathematical Information Computational Sciences (MICS) program in the respective project areas is very valuable.

A number of LBNL staff members continue to be key leaders in the various research and working groups such as the Global Grid Forum.

Energy Sciences Network (ESnet) enables thousands of DOE, university and industry scientists and collaborators worldwide to make effective use of unique, DOE research facilities and computing resources independent of time and geographic location. It is a major part of the nationwide, civilian science research networking in the United States (US), with Internet 2/Abilene providing the rest.

Over the past two years, an approach has been developing for evolving the infrastructure to meet the future needs of the science community. As a result, an important first step was made through the development of the Bay Area Metropolitan Area Network (MAN).

In the Applied Mathematical Research program, the Contractor meets the standard of performance. No particularly noteworthy accomplishments or deficiencies

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| Criteria 2: Relevance to National Needs and Agency Mission |
| Rating: Outstanding |

Parallel programming remains a difficult challenge for the typical applications expert, and improving our understanding of the interaction between complex computer architectures and complex scientific applications, is essential to timely scientific progress. LBNL activities contribute to improving our ability to effectively use large parallel systems.

Partnering across science and technology programs is an important element to the structure and goals of the MICS program that supports these projects. LBNL fully supports this partnering and provides effective championing of this goal, within the broader community.

ESnet continues to be a visible and critical piece of DOE science infrastructure. It provides high reliability and high operational security in the systems that are necessary for network operations. Since end-to-end performance is important to scientists funded by DOE, whether they are located at a university or a laboratory, a plan has been developed and implemented to ensure that Laboratory to University connectivity being as good as Lab-Lab and Campus-Campus connectivity. This was made possible by working closely with Abilene, the network serving the academic community.

Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities

Rating: Outstanding

To meet “National Needs and Agency Missions”, NERSC upgraded their capability by 30%; i.e., from 10 trillion floating point operations (teraflops) per second (peak) to 13 teraflops per second.

ESnet provides global connectivity for the DOE Labs and several collaboration and Grid support services. The performance of ESnet over the past year has been excellent, with only minimal unscheduled downtime. The reliability of the core infrastructure is excellent. Availability for users is also excellent.

Users continue to be very satisfied with the centralized services ESnet provides that support human collaboration, namely, voice, video, and data teleconferencing for globally dispersed collaborators. ESnet also supports Grid infrastructure by providing a high quality Public Key Infrastructure supplying digital identity certificates that are essential for the trust management needed for cross-site resource sharing (e.g. international HEP collaborations). During the past year a significant advance was made through the establishment of the International Grid Trust Federation.

Criteria 4: Program Management and Planning

Rating: Outstanding

LBNL continues to demonstrate effective technical leadership and management as indicated by the widely recognized success of the SciDAC Performance Evaluation Research Center (PERC) and Scientific Data Management Group (SDM) ISICs which are multi-laboratory, multi-university projects led by LBNL. All of the computer science activities at LBNL are managed on time and within budget. There is a strong line of communication between program management in MICS and the head of the high performance research department at LBNL. Also, LBNL has succeeded in attracting an internationally known scientist, Kathy Yelick, to head their Future Technologies Group (the organizational home of their computer science research), and this process was effectively coordinated with MICS.

NERSC initiated installation of an upgrade that will increase their capability by over 50%; i.e., from 13 teraflops per second to 20 teraflops per second (peak). NERSC issued a Request for Proposals which should result in a doubling of NERSC capability, while retiring 10 teraflops per second (peak) of old equipment.

Partnering across science and technology programs is an important element to the structure and goals of the MICS program that supports these projects. LBNL fully supports this partnering and provides effective championing of this goal within the broader community as evidenced by the project referred to above.

ESnet has also moved in the direction of becoming more involved with the network R&D community, both to assist that community and to more rapidly transition new technology into ESnet. To facilitate this, the new implementation strategy includes interconnection points with National Lambda Rail and UltraScience Net – DOE's network R&D testbed. ESnet has also been proactive in moving to a higher level of cooperation with other Research and Engineering (R&E) networks, both nationally and internationally.

In the Applied Mathematics Research program, the contractor exceeds the standard of performance for effectiveness and efficiency of research program management.

Performance Area: Fusion Energy Sciences

Overall Performance Rating: Outstanding

Criteria 1: Quality of Science
Rating: Outstanding

The quality of science produced by the group at Lawrence Berkeley National Laboratory (LBNL) on heavy ion beam science is **Outstanding** at 95%. Central to this pursuit is exploring the scientific feasibility of neutralized drift compression of ion beams. In a remarkably short span of time, in its first fiscal year in the redirection of its efforts towards High Energy Density Physics (HEDP), the LBNL group put together an experiment (NDCX-I) that demonstrated compression of the beam to 50 times its intensity. It is also working on an innovative approach to accelerating ions inductively, using a pulsed helical transmission line.

Criteria 2: Relevance to National Needs and Agency Mission
Rating: Excellent

Heavy ion beam is one of the potential drivers for inertial fusion energy (IFE). Its impact on the National Energy Policy and addressing the National Energy Goal is potentially large if IFE can be demonstrated to work.

Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities
Rating: N/A

Criteria 4: Program Management and Planning
Rating: Outstanding

Programmatic performance and planning of the LBNL group was **Outstanding** at 95%. The program leadership (Dr. Grant Logan) was outstanding in redirecting the program towards applications in high energy density physics. In concert with overall Department of Energy (DOE) and Federal mission objectives, the leadership was responsive strategically to the new research missions and emerging national needs in the area of Warm Dense Matter. LBNL made the issue of "How can heavy ion beams be compressed to the high intensities required for high energy density matter and fusion ignition conditions?" its top scientific priority. LBNL immediately went to work on this issue, and successfully put together an experiment that demonstrated preliminary success in intensifying the beam by longitudinal compression of the beam. The LBNL group made outstanding improvement in programmatic planning, in establishing programmatically effective milestones, in formulating the task plans, and in the execution of the task plans. It attained the programmatic milestones successfully on time and on budget, and with excellent documentation in the form of weekly reports, quarterly reports, and a great number of refereed (65) and non-refereed (29) publications, and with participation in key national and international conferences and workshops. The program leadership is to be specially commended for maintaining an exceptional high morale in the face of continual funding uncertainties and outlook for FY 2006.

Performance Area: Biological and Environmental Research

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| Overall Performance Rating: Outstanding |
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| Criteria 1: Quality of Science: Rating: Outstanding |
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Lawrence Berkeley National Laboratory (LBNL) scientists continue to conduct high quality science across all areas of the Biological and Environmental Research (BER) Life Sciences research program. LBNL's greatest scientific impacts in Life Sciences research continue to be in genomics (through the Joint Genome Institute (JGI)) and the Genomics: GTL program. The JGI remains an international leader in the generation and analysis of high quality, high throughput, low cost, high impact DNA sequencing data. Its contributions to GTL continue to grow with successes in the recent GTL competition for new research projects; LBNL scientists continue to be leaders in several areas of GTL science. LBNL scientists conducting low dose radiation research are also scientific leaders in the field including the Low Dose Program's Chief Scientist, Mary Helen Barcellos-Hoff. Mina Bissell was recently recognized for her sustained scientific excellence and leadership by her receipt of a BER Distinguished Science Fellowship in the Life Sciences. Finally, LBNL continues to excel in providing new synchrotron-based instrumentation for structural biology research, with the innovative renewal proposal for the infrared spectromicroscopy program receiving highly favorable reviews and development of the new x-ray microscopy beamline proceeding well.

LBNL's Medical Sciences research in Nuclear Medicine is characterized by excellent science and scientific management and by scientific leadership across the range of disciplines in the research programs including: radiopharmaceutical development, medical imaging instrumentation, and clinical feasibility studies of basic science technologies for potential human use. These research programs generally have met the high standards of panel and peer-review, have excellent track-records of productivity and scientific publications, and are well-regarded nationally and internationally. The radiopharmaceutical development and imaging instrumentation programs have successfully been able to transfer the basic laboratory technology from bench top to industry for further development for potential clinical applications.

Research supported by the Atmospheric Radiation Measurement (ARM) program is of high quality at LBNL. Both the carbon cycle and carbon sequestration research supported by BER at LBNL are also of high quality. The research continues to focus on mechanisms and quantities of carbon transformed from plant material to organic matter storage in soil. Research from both Enriched Biosphere Isotope Study (EBIS) and carbon sequestration projects contribute to improved understanding of the role of root transformation processes as the source of organic matter formation of soils of forested systems. The research is advancing the use of isotopic tracers (C-13, C-14, O-18) to identify and understand, mechanisms of carbon sequestration by soils. The projects provide important information for modeling both the carbon cycle and for determining the fate of excess CO₂ from energy emissions. Results of this research are routinely published in journals.

LBNL supported the Environmental Remediation Sciences Division (ERSD) mission with high quality science directed at program goals. LBNL contributed strongly to the ERSD mission in both single investigator and collaborative modes. LBNL continues to show good success in winning research funding through peer-reviewed competition and produces high quality publications. With approximately \$3M in FY 2005 research funding, LBNL is one of the three largest recipients of

program funding. LBNL progress in the joint DOE-National Science Foundation (NSF) Environmental Molecular Sciences Institute has been good to date with important advances expected in the future. LBNL involvement in field research efforts has provided significant scientific findings in both lead roles (e.g., Hanford chromium bioimmobilization research) and supporting roles (e.g., geophysical findings at the Old Rifle Uranium Mill Tailings Remedial Action (UMTRA) site). LBNL researchers are conducting world-class science using technology that is providing leadership in field-based applications of innovative geophysical techniques for monitoring microbial processes, subsurface bioremediation of metals and radionuclide contaminants, and fundamental molecular interactions at environmental interfaces.

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| <p>Criteria 2: Relevance to National Needs and Agency Mission</p> |
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| <p>Rating: Outstanding</p> |
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LBNL Life Sciences research continues to be highly relevant to DOE and national needs through its DNA sequencing for DOE-relevant and national science needs, GTL research addressing DOE energy and environmental needs, research and development for national structural biology infrastructure needs, and low dose radiation research that contributes to improving the science base that will underpin future radiation protection standards.

LBNL's Medical Sciences Divisions' programs at the Department of Functional Imaging support nuclear medicine research including positron emission tomography (PET) imaging technology development activities that promote the Department's mission to develop applications of radioisotopes for diagnosis and therapy, and offer to improve health care and medical research in the country.

The Atmospheric Radiation Measurement (ARM)-funded projects at LBNL are integral parts of the interagency Climate Change Science Program. LBNL research is addressing the priority scientific questions that have been identified by the program.

LBNL's Atmospheric Science Program research is relevant to the successful completion of the BER long-term objective to deliver improved climate data and models for policy makers to determine safe levels of greenhouse gases in the Earth's atmosphere, by providing more effective measurements of black carbon aerosols.

The carbon cycle and carbon sequestration research at LBNL produces new knowledge on carbon transformation to soil organic matter, which is especially relevant to the BER long-term goal of "determining safe levels of greenhouse gases in the Earth's atmosphere." The research is a significant part of DOE's carbon cycle research, and also contributes significantly to soil carbon investigations of the North America Carbon Program (NACP) within the U.S. Climate Change Science Program. In recognition for excellence in soil carbon research, the lead LBNL Principal Investigator (M. Torn) was invited to become a member of the NACP scientific steering group

LBNL provides a variety of promising technologies and techniques that are being applied to the understanding of the fate and transport of contaminants in the subsurface, which of high relevance to DOE's mission and the National interest because DOE is the steward of many contaminated sites that will require novel monitoring and remediation approaches.

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| <p>Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities</p> |
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| <p>Rating: Outstanding</p> |
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The Joint Genome Institute's Production Genomics Facility (JGI/PGF) has evolved into a national user facility that addresses the DNA sequencing needs of the DOE and the Nation's scientists. The JGI/PGF continues to exceed its performance goals and to be very responsive to user needs. The operation of the JGI/PGF is currently (early FY 2006) undergoing review by the Biological and Environmental Research Advisory Committee.

Dr. Torn has been very successful in meeting scientific and technical objectives of the ARM Climate User Facility within a flat budget. LBNL has built successful collaborations with recognized experts, and these collaborations have benefited the user facility.

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| <p>Criteria 4: Program Management and Planning</p> |
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| <p>Rating: Outstanding</p> |
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LBNL does an outstanding job of planning, coordinating and organizing its Life Sciences research programs to address highly relevant DOE and national science needs. They have put together (and continue to propose) a combination of large and small research projects that involve both teams of interdisciplinary scientists from multiple institutions as well as single investigator-type projects that address the varying needs of the BER Life Sciences program. LBNL's Physical Biosciences Division established the world's first Synthetic Biology Department that could be of great value to BER's GTL program.

The programs at the Department for Functional Imaging are well managed. The investigators have forged successful intramural and extramural collaborations for the effective management and productivity of research programs, and for optimum use of resources and facilities. Laboratory management also continues to be responsive to DOE programmatic needs in a timely fashion. The DOE BER staff continues to be informed by the laboratory principal investigators on major research highlights and scientific achievements.

Investigators funded by the ARM program at LBNL have outstanding publication records and have developed very productive collaborations with other scientists. Scientific planning and coordination of carbon cycle research at LBNL with researchers at other DOE laboratories is excellent. Dr. Torn has been an active and productive participant in planning meetings for the NACP. She has also been a key member of a team that has developed an interdisciplinary experiment that is attracting interagency interest. Productive collaborations with climate modelers have been established to include the carbon cycle into Global Climate Models (GCMs). The LBNL PI for carbon cycle research might also consider participation in LBNL planning for DOE lab-wide coupled carbon cycle-climate modeling. In her first year of funding, Dr. Surabi Menon demonstrated that she is an outstanding young scientist and has been a productive member of two modeling working groups. Both have made significant strides in their research this past year, and their collaborations are expected to expedite the incorporation of their results into climate models.

LBNL has done an outstanding job managing the Natural and Accelerated Bioremediation Research (NABIR) program office. The program office provides important support to the NABIR program, to

the Oak Ridge National Laboratory (ORNL) Field Research Center, and to investigators throughout the BER Environmental Remediation Sciences Division (ERSD) research program. An ERSD synchrotron science project was initiated at the ALS, and the program appears to be well-integrated with peer activities at the other three DOE synchrotron light sources. Many scientists funded by ERSD are coming to LBNL to use the ALS facility, and the Laboratory is encouraged to continue to develop this capability.

Performance Area: Energy Efficiency & Renewable Energy

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| Overall Performance Rating: Excellent |
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| Criteria 1: Quality of Science Rating: Excellent |
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Building Technologies Program

Lawrence Berkeley National Laboratory (LBNL) achieved significant results through the further development and refinement of the White Roofs initiative.

LBNL work with the New York Times facilities team, to conduct an Advanced Facades integration project that combines automated solar shades, daylight sensors, electronic ballast T-5 dimming lights, and develop optimization protocols. Fundamental new technologies resulted from the competitive solicitation, that was issued by the NY Times to prospective bidders.

Significant improvements to the engineering documentation for EnergyPlus resulted in a doubling of the content, on the underlying engineering methods and equations.

In windows research, LBNL has demonstrated the ability to deposit tungsten oxide using plasma assisted sputtering technology at ambient conditions. This progress is on the path to lower manufacturing cost for first generation electrochromic devices. The science learned from this applied project will also potentially offer significant breakthroughs in other glass coating and related applications.

For appliance standards research, LBNL has no quality control, lacks the ability to plan resources adequately to tackle complex tasks and leaves very little time for internal reviews before tasks are due. It seems as if every task is a rush job, which most often results in deliverables which lack quality.

The work associated with the Digital Controls reflects no advancement of the relevant science or technology, and is largely a demonstration activity.

FreedomCar and Vehicle Technologies Program (OFCVT)

LBNL is also a major contributor to the OFCVT's Automotive Lightweighting Materials (ALM) research and development effort.

In the battery Research and Development (R&D) area, LBNL developed a method for stabilizing the structure of low-cost, abuse tolerant spinel active material, potentially extending the lifetime of lithium ion cells.

LBNL developed a miniature probe for implementation of a phased-array acoustic method for assessing the quality of resistance spot welds (RSWs) nondestructively, in real-time on an automotive assembly line, using semi-skilled labor.

Industrial Technologies Program (ITP)

LBLN has continued its successful development and implementation of public/private partnerships that form the core of the ITP Technology Delivery subprogram. The Laboratory is lauded by ITP's private sector partners for timeliness and accuracy in its delivery of energy management best practices. The Laboratory has managed the creation of a database of the largest energy using industrial companies in the United States, an activity that has proven essential to the ITP Technology Delivery strategy.

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| Criteria 2: Relevance to National Needs and Agency Mission Rating: Excellent |
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Building Technologies Program (BT)

LBLN contributed to the commercial codes program being able to achieve its joule metric requirement of 1-2% improved energy efficiency, through voluntary (private sector) codes.

BT's peer review of the Windows projects were highly rated.

LBLN completed 15 prototypes of low cost, highly insulating windows. These prototypes have the potential to offer significant improvement while only adding modest cost. The mid-year success of this project and relationship to the FY 2006 Joule Target were considered so valuable that they resulted in the competitive award to accelerate and expand this project.

LBLN has not sent a final report on residential and commercial air distribution and duct leakage prevention, or the residential and commercial air distribution projects.

In general, the Digital Controls for Lighting and the Lighting Simulation Toolbox projects fall within the Energy Efficiency Renewable Energy (EERE) mission, but the fit within the Lighting R&D element is marginal. Neither project is advancing pre-commercial technology in a "push the envelope" sense. Many activities are deployment and demonstration based.

FreedomCar and Vehicle Technologies Program

Energy storage technologies, especially batteries, are critical enabling technologies for the development of advanced, fuel-efficient, light- and heavy-duty vehicles and are thus, key components of the U.S. Department of Energy's (DOE) Energy Strategic Goal. The battery research at LBNL contributes to the attainment of this goal by developing a better understanding of why batteries fail, creating models that predict system failure and permit system optimization, and investigating new and promising materials.

The work on lightweighting materials impacts the energy conservation/efficiency mission of DOE by enabling cost-effective design and manufacture of automotive structures from materials such as aluminum, magnesium, advanced high strength steels and composites that are lighter than the mild steels currently used.

Battery R&D projects received accolades from external reviewers at the recently-held 2005 Merit Review. Reviewers also suggested enhanced funding to permit more rapid evaluation and understanding of promising chemistries

Industrial Technologies Program

LBNL has provided important assistance to the ITP Technology Delivery subprogram. They have been a major contributor to the delivery of near-term energy efficiency practices to the industrial sector, and have been central to the energy savings achieved by industry as a result of ITP efforts.

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| <p>Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities</p> |
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| <p>Rating: N/A</p> |
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| <p>Criteria 4: Program Management and Planning</p> |
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| <p>Rating: Good</p> |
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Building Technologies Program

LBNL successfully worked with DOE staff, to integrate research and development concepts into actual code proposals that effectively bridge the gap between above code and code minimum activities.

Coordinating work which is co-funded with the California Energy Commission (CEC) is quite challenging, as there are different funding cycles and different goals. LBNL's work on commercial building controls has been coordinated, completed, and documented and is exemplary.

Working with other laboratories and contractors, LBNL successfully completed, packaged, and released two major new versions of DOE's EnergyPlus building energy performance software. The organizational structure for appliance standard work seems to be less than ideal with full time employees (FTEs) spread over multiple individuals. Efforts are diluted due to a high number of workers under a single task, impacting quality in a non-positive matter. Laboratory project managers need to be held accountable and do more than just manage their laboratory people. Process improvement or lessons-learned from previous work experience, is lacking from this organization.

LBNL has improved on the FY 2004 issue of high uncoded balances and delays in work on several projects, including the highly insulating window project.

For the Digital Controls for Lighting nor the Lighting Simulation Toolbox projects, LBNL management has failed to recognize the present focus areas of the LR&D program and adjust these projects accordingly. While both could have been recast to address present LR&D activities, such as controls for solid state lighting and modeling of solid state lighting luminarie performance via Radiance, they have remained focused on traditional lighting needs, which are not as relevant to the present LR&D mission. Planning for the near term (five years out) in general, has been lacking.

A few deliverables related to windows research are one or two months behind schedule, mostly due to stakeholder interface issues, but LBNL needs to consider such impacts in future plans.

FreedomCar and Vehicle Technologies Program

Investigators at LBNL are widely recognized by persons in the battery R&D community, as among the leading experts in battery and electrochemical technology.

Industrial Technologies Program

LBNL has demonstrated highly effective planning and management of projects. This includes excellent transfer of results to private companies. Budget management has been exceptional.

Performance Area: Civilian Radioactive Waste Management

Overall Performance Rating: Outstanding

Criteria 1: Quality of Science
Rating: Excellent

Lawrence Berkeley National Laboratory (LBNL) has been professional, accurate, detailed and thorough in their representation of the technical work performed for the Yucca Mountain Project (YMP), and closed out a number of concerns that had been raised. The Laboratory took the lead in introducing the impacts of chemistry on the waste storage system, and led the way in understanding geochemical processes. LBNL Principal Investigators and scientists have consistently performed in an outstanding manner in the quality of science, and have received high marks from YMP Office of Science & Technology independent peer reviews. The science for the Natural Barriers Thrust projects is state-of-the art. LBNL successfully performed work in compliance with Yucca Mountain Project procedures; however conditions regarding traceability and transparency have occurred. These conditions are offset by excellent work performed in other technical areas mentioned above.

Criteria 2: Relevance to National Needs and Agency Mission
Rating: N/A

**Criteria 3: Performance in the Technical Development and Operation of
Major Research Facilities and User Resources**
Rating: N/A

Criteria 4: Program Management and Planning
Rating: Outstanding

LBNL has done an outstanding job in achieving programmatic goals for the Yucca Mountain Project. LBNL researchers and managers consistently react well under pressure and rise to meet challenges, while providing sound technical work for this project, which is highly subject to change. LBNL has performed outstanding on all its projects, and carried out work within budget and on schedule. LBNL responded effectively to the Director of the YMP Office of Science and Technology through outstanding collaboration with other organizations.

Performance Area: Fossil Energy

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| Overall Performance Rating: Outstanding |
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| Criteria 1: Quality of Science |
| Rating: Outstanding |

A review of the indicators of research excellence (impact of science contributions, leadership in the scientific community, innovativeness, and sustained achievement) found many LBNL accomplishments performed at the outstanding level, especially leadership contributions to the carbon sequestration program.

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| Criteria 2: Relevance to National Needs and Agency Mission |
| Rating: Outstanding |

The research tasks identified by LBNL provide technical support to a high profile carbon sequestration project. LBNL provided outstanding technical support to this project and served as an important team member to the project's consortium.

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| Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities and User Resources |
| Rating: N/A |

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| Criteria 4: Program Management and Planning |
| Rating: Outstanding |

In FY 2005, LBNL performed at the outstanding level. Field Work Proposal scientific and technical objectives that supported the Texas Frio brine study validated measurement, monitoring, and verification at the Frio test site:

- using hydrologic analysis of CO₂ injection;
- using analyses of tracer testing;
- using laboratory relative permeability testing;
- using geophysical monitoring activities; and
- using surface CO₂ monitoring.

These required a great deal of coordination with other agencies, laboratories and scientific disciplines. All scientific and technical objectives were met. The quality of science performed was outstanding as exhibited by the numerous presentations and publications that resulted.

Performance Area: Office of Electric Transmission and Distribution (OETD)

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| Overall Performance Rating: Outstanding |
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| Criteria 1: Quality of Science: Rating: Outstanding |
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LBLN participated substantially in research to identify methods to detect the presence of market power on the electric power system, and co-authored several published technical papers. This work is on the leading edge in evaluating the use of grid reliability analysis to assess impacts on market designs.

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| Criteria 2: Relevance to National Needs and Agency Mission Rating: Outstanding |
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LBLN has worked effectively with a wide variety of stakeholders on matters of great national importance. The work of the technically capable and credible LBNL team provided a high payoff in the form of valuable application of results in a real-world setting.

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| Criteria 3: Performance in the Technical Development and Operation of Major Research Facilities and User Resources Rating: N/A |
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| Criteria 4: Program Management and Planning Rating: Outstanding |
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LBLN performed outstanding work related to published reports, program reviews, management of subcontracts, utilizing a board of National electricity industry experts to review and guide the program, and developing the Transmission Reliability program's annual operating plan.

LABORATORY LEADERSHIP

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Performance Area: LABORATORY LEADERSHIP

Performance Objective: Laboratory Leadership

Laboratory leadership activities enable successful planning and implementation of research programs for DOE missions and ensure the stewardship and long-term viability of the institution. These leadership activities include: strategic planning and direction consistent with DOE and SC missions and strategic plans, institutional stewardship of and accountability for operations, effective resource management, internal and external communications, educational and community outreach, and diversity leadership.

(Weight = 100%)

Gradients:

| Balanced Scorecard Metrics Score | Gradient |
|----------------------------------|-----------------|
| Unsatisfactory | < 60% |
| Marginal | ≥ 60% but <70% |
| Good | ≥ 70% but < 80% |
| Excellent | > 80% but <90% |
| Outstanding | ≥ 90% |

Gradient Description

Unsatisfactory Significantly below the standard of performance; deficiencies are serious, and may affect overall results, immediate senior management attention, and prompt corrective action is required.

Marginal Below the standard of performance; deficiencies are such that management attention and corrective action are required.

Good Meets the standard of performance; assigned tasks are carried out in an acceptable manner – timely, efficiently, and economically. Deficiencies do not substantively affect performance.

Excellent Exceeds the standard of performance; although there may be room for improvement in some elements, better performance in all other elements offset this.

Outstanding Significantly exceeds the standard of performance; achieves noteworthy results; accomplishes very difficult tasks in a timely manner.

Performance Narrative:

Planning and Strategic Direction

Approach/Deployment

In his first year as Laboratory Director, Dr. Steven Chu formed a new leadership team that, together with University of California (UC) leadership, successfully won the first-ever competition of Lawrence Berkeley National Laboratory's (LBNL) contract. This new LBNL leadership team is building relations with top Department of Energy (DOE) officials to help advance Laboratory planning in support of DOE missions and institutional stewardship, including with Secretary of Energy Samuel Bodman, Office of Science (SC) Director Raymond Orbach, SC Chief Operations Officer Don Erbschloe, and SC Berkeley Site Office (BSO) Manager Aundra Richards.

A contract transition plan was executed to provide a smooth transition from the previous "Contract 98" to the new "Contract 31." As proposed, the UC is establishing an LBNL Advisory Board, comprised primarily of senior, external members, to help guide planning and direction of the institution. The Laboratory Director relies on two new senior advisory bodies for strategic planning and decision-making: the *Director's Cabinet* meets daily and is comprised of the Director, Deputy Director, Associate Laboratory Director (ALD) for Operations, and the Assistant to the Director; and the *Senior Leadership Council (SLC)* is comprised of the Cabinet members plus the four science ALDs (Physical, Life and Environmental, General, and Computing Sciences), the Chief Financial Officer (CFO), the Chief Information Officer (CIO), the Institutional Assurance Director, the Director of Planning and Development, and the Laboratory Counsel.

Several Laboratory-wide planning systems are used to guide and manage the institution and to support DOE oversight and management by UC. These include Institutional (or Business) Planning and the associated annual SC review; Strategic Facilities Planning; Facilities and Capital Asset Planning; Environment, Safety, Health (ES&H) and Infrastructure Planning; Integrated Safeguards and Security Planning (including Cyber security); Communications Planning; Community Relations Planning; Diversity Planning; Indirect Cost Planning (including Facilities Maintenance and Laboratory-Directed Research and Development (LDRD) budgets), and others. These plans are coordinated within the Laboratory through the use of a Comprehensive Planning Calendar.

Planning documents that are communicated to and reviewed by the SC-BSO and in DOE-HQ include the LBNL Business Plan/Institutional Plan, Laboratory-Directed Research and Development Plan, Strategic Facility Plan, Project Plans, ES&H and Infrastructure Plan, field budget/work proposals, and others. Laboratory management also meets regularly with DOE officials through a variety of communications forums, including weekly meetings between LBNL leadership and the BSO Site Manager. Leaders and functional managers from UC, LBNL and BSO collaborated in the summer of 2005 to plan and develop a set of FY 2006 contract measures and targets for the contract Performance Evaluation and Measurement Plan (PEMP) in accordance with the new format and process established system-wide by SC.

LBNL leadership continued to communicate and work closely with DOE-SC to align the Laboratory's scientific and operational activities with DOE scientific and management priorities. In FY 2005, a five-year Business Plan for the Berkeley Laboratory was developed (FY 2006-2010). It builds upon prior institutional planning efforts, identifies the Laboratory's business-lines, their relative health and competitive standing (opportunities and prospects for growth), and characterizes benefits and risks. It

was reviewed by SC leaders in Washington DC in May 2005. SC is submitting its Business Plan for LBNL and for all its laboratories to Congress, as directed in the FY 2005 appropriations law.

Under the leadership of Dr. Chu and Deputy Director Dr. Graham Fleming, the Laboratory has embarked on a new strategic research initiative to develop sustainable, carbon-neutral energy supplies, a top 21st century “grand challenge” for science and technology. It integrates the Laboratory’s basic science and applied energy missions, and leverages broad research capabilities and assets in the physical and biological sciences together with advanced computing and engineering. LBNL held a solar energy chemical fuel workshop in March 2005, and participated in a national workshop held by the SC Basic Energy Sciences program in April 2005. The Laboratory held another workshop in August 2005 on the future of light sources at Berkeley Laboratory that focused on scientific opportunities possible through upgrades of the Advanced Light Source (ALS).

Results Highlights

Research Programs:

- LBNL continues to broadly advance DOE’s missions, including those of the Office of Science, as well as the missions of other major sponsors, through the pursuit of strategic goals. LBNL’s planning and leadership efforts resulted in scientific and operational successes that contributed to achieving DOE program objectives in FY 2005. Some FY 2005 program results are highlighted below:
- Construction of the Molecular Foundry is nearing completion under budget and a few months ahead of schedule. CD-4a (Start of Initial Operations) is planned for May 2006, with CD-4b (Start of Full Operations) in December 2006. The project has employed safety best practices and had a strong safety record. It also provided the basis for LBNL earning certification of its Earned Value Management System (EVMS).
- The user base of the Advanced Light Source (ALS) continues to grow and now exceeds 2000 users for FY 2005, and scientific productivity remains at the top among U.S. synchrotron light sources. Conceptual design of the “top-off” mode upgrade was reviewed in November 2004, major systems design work was completed, and the procurement of long-lead procurements is underway. It will double the time-average beam current, and allow the ALS to remain on the leading edge of x-ray science.
- The Transmission Electron Aberration-Corrected Microscope (TEAM) project received CD-1 (Preliminary Baseline range) approval in September 2005. This \$25-30M capital equipment project will be located at the National Center for Electron Microscopy (NCEM) and is on track for completion in FY 2008.
- The National Energy Research Supercomputing Center (NERSC) made progress upgrading its capacity for users: the NERSC V supercomputer acquisition is proceeding on schedule for award in FY 2006; and two intermediate-scale New Computing Systems (NCS) were/are being added to expand NERSC (NCS-a, *Jacquard*, was installed in FY 2005, and NCS-b, *Bassi*, was acquired in FY 2005, and is being tested to enter production in mid-FY 2006. The latter systems are designed to load-share certain classes of computational problems more efficiently than the main system (Seaborg). The 10Gbps Energy Sciences Network (ESnet) upgrade for the Bay Area Metropolitan

Area Network was dedicated by SC Director Orbach and LBNL Director Chu at the Oakland Scientific Facility in June, 2005.

- The Joint Genome Institute (JGI) is evolving into a User Facility, and is now the world's largest sequencer of microbial genomes. In FY 2005, it exceeded its goal of 30 billion base-pairs; the capacity is now ~3 Bbp/month. Awards were made for the second round of the Community Sequencing Program (CSP), making 60% of the JGI's DNA sequencing capacity available to merit-reviewed proposals from the national scientific community. A new Laboratory Sequencing Program (LSP) was initiated to utilize 20% of the JGI resource for competitively selected proposals from the DOE partner national laboratories (LBNL, Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), Oak Ridge National Laboratory (ORNL), and Pacific Northwest National Laboratory (PNNL). The Integrated Microbial Genomes (IMG) database was implemented to enhance the usability of the vast amounts of genetic sequencing data coming from the JGI Production Genomics Facility (PGF).
- In a new round of Genomics/Genomes to Life (GTL) awards, multi-institutional teams led by LBNL Principal Investigators in the Life, Genomics, and Earth Sciences divisions won 3 of 6 new projects totaling ~\$50M over five years.
- Research and Development (R&D) for the Supernova/Acceleration Probe (SNAP) satellite achieved a milestone in FY 2005: the near infrared detector meets specifications for the DOE-National Aeronautic Space Administration (NASA) Joint Dark Energy Mission (JDEM). The Secretary of Energy was briefed on SNAP in August, 2005, and has become an advocate. LBNL is preparing its SNAP proposal in response to NASA's call for JDEM conceptual studies, which is due March, 2006.
- A successor 5-year Memorandum of Agreement was executed with the Air Force to continue to utilize a ~40% of the 88" cyclotron's operating time for space environment testing during FY 2006-2011. The Gretina detector project is on budget and on schedule, and received approval of Critical Decision 2a/3a (Performance Baseline/Long-lead Procurement) in June, 2005.
- The Heavy-Ion Fusion Virtual National Laboratory continues to realize progress on pertinent beam technologies through experiments that operate power-plant driver-relevant scales. At SC's request, the program developed a white paper proposal for a new, accelerator-based High Energy Density Physics program.
- LBNL remains active in modeling and measuring the global carbon-cycle, which is critical to understanding global climate change, and in developing carbon sequestration/management strategies. It leads the Western Regional Carbon Sequestration Partnership, operates the DOE Atmospheric Radiation Measurement program in Oklahoma, and continues to deploy and gather data from autonomous probes in the Pacific and Atlantic oceans that measure the carbon biogeochemical cycle.

Operations:

- Under the new LBNL contract, a new Institutional Assurance Office was established to manage contract requirements, monitor the implementation of contract proposal initiatives, institute laboratory project management systems, institutionally track corrective actions, and to aid continuous improvements in operations.

- Strong senior management action and focus on safe work performance reversed the increase in incidents that occurred in early months of 2005. LBNL's average FY 2005 Total Recordable Cases (TRC) rate of 1.61 missed the SC goal of 1.17, but the fourth quarter rate improved to 0.95.
- Plans for the deconstruction of the Bevatron were drafted, and the California Energy Quality Act (CEQA) process initiated for the start of full demolition in FY 2006.
- The updated site-wide facilities seismic safety survey progressed, and SC approved CD-0 for a Phase 1 of seismic rehabilitations (for Buildings 50 and 74) as an FY 2007 start under the Science Laboratory Infrastructure (SLI) program.
- LBNL developed a revised, more accurate approach for calculating Replacement Plant Value (RPV) that was validated by the DOE Office of Engineering and Construction Management, and endorsed by SC for possible adoption by other SC labs.
- Plans were advanced for alternatively financed facilities. DOE approved the Mission Need Statement for the Computational Research and Theory (CRT) facility. A Berkeley Guesthouse (user lodging facility) is also in the planning stages.
- The Chief Financial Officer's organization was strengthened with a new Budget Officer, Controller, Procurement Officer, and Property Manager. Financial systems were upgraded to a new web-based system, and training and process improvements are underway.
- Planned improvements were implemented in cyber security, financial management, email, networking, and DOE compliance reporting.

Communications, Educational and Community Outreach, and Diversity

Approach / Deployment

Assertive communication priorities were established by Director Steve Chu. The Public Affairs Head was given responsibility for Laboratory-wide internal and external communications and establishing continued Public Affairs' visibility. The Director led his management team through communications activities that reflect key Laboratory issues and opportunities to achieve DOE's missions. He maintained effective communication dialogue with Department of Energy Secretary Samuel Bodman, with DOE leaders, with Laboratory managers in the University of California, and with Laboratory employees. Part of the Director's communication program included lunches with divisions, quarterly Brown Bag meetings, e-mail solicitations for employee input, and articles in employee publications. *The Berkeley Lab View*, *Today at Berkeley Lab*, and the Regulations and Procedures Manual, are all utilized to articulate expectations to staff. There are also individual scientific divisions' annual reports and websites for the public accessible through the Laboratory webpage.

The View, the biweekly employee newspaper is designed to complement the daily electronic newsletter, *Today at Berkeley Lab*. Both provide laboratory staff with information about both scientific and operational aspects of the Laboratory. Additionally, a monthly web magazine, *Science at Berkeley Lab*, is published and contains technical articles on the diverse research at the Laboratory. *The Berkeley Lab Information System* (BLIS), a one-stop web-based navigation home page for

employees was launched this year and serves as another communication vehicle for bringing the Laboratory together.

The Center for Science and Engineering Education (CSEE) has proven to be a leader among the DOE national laboratories in promoting, developing, implementing, and evaluating programs that use Laboratory resources to improve the quality of math, science, and technology education. These include over 20 scientific programs for public science and technology literacy that covers pre-college, community college, undergraduate, and graduate education in Science, Technology, Engineering and Mathematics. Research fellowships are offered to undergraduates through DOE-sponsored programs, including the Science Undergraduate Laboratory Internship, the Community College Initiative, the Pre-Service Teacher Program, the Faculty and Student Teams program, and Graduate and undergraduate internships provided in partnership with the National Science Foundation. Partnerships have been established with faculty to recruit and place underrepresented minorities in science, with local school districts and outreach efforts, and with other minority institutions to ensure diversity in education outreach efforts.

LBNL management, scientists, and staff continued to take an active role in community outreach activities. They participated in educational organizations, numerous local boards and commissions, Chambers of Commerce, community foundations, service clubs, and environmental groups. Communications with community groups was widened through the distribution of Laboratory news via a community newsletter, *Science on the Hill*, an active speakers' bureau, tours for the public, and the outreach program called Berkeley Lab Friends of Science. The Laboratory's Summer Lecture Series was broadcast to the community via UCTV and on a local-access cable channel. The programs promoted LBNL's scientific mission and accomplishments in local communities. LBNL remains well represented on the Hills Emergency Forum, which is a regional body established after the 1991 East Bay firestorm to update the vegetation-management protocols that set the standard for regional practices in fire-risk reduction.

LBNL continues to implement diversity leadership efforts and initiatives it began in FY 2001. These include the requirements that all Laboratory Divisions develop and utilize Diversity Action Plans (focused on recruitment and retention and posted on the LBNL webpage), and that all Laboratory employees have a diversity-related performance standard. LBNL implements an integrated Diversity Management structure that includes the Laboratory directorate, the Scientific and Operations divisions, Human Resources department, and the Center for Science and Engineering Education (CSEE).

CSEE's programs engage a geographically broad range of students at different educational levels and has become increasingly involved in helping to identify and build a diverse pipeline for the Laboratory's prospective future recruitment. For example, of over 80 undergraduate students in LBNL-mentored research internships in FY 2005, women represented 49% and underrepresented minorities accounted for 40% of the participants.

Director Chu and members of his senior management team, annually review division diversity plans, including existing demographics, turnover, hiring and promotion statistics, and program directions and recruitment targets. The Laboratory has a Workforce Diversity Office (WFDO) that establishes baseline demographics, provides standardized measures of availability, and evaluates progress toward achieving planning goals. Since FY 2003, the LBNL has had a Best Practice Diversity Council comprised of representatives from across the Laboratory. A key part of its recruitment process, are coordinated efforts to ensure the broadest possible recruitment pools. Diversity efforts go beyond

demographic issues and also include actions that affect the workplace environment, e.g., family-friendly policies for maternity and dependent-care.

Results:

The three units of the Lawrence Berkeley National Laboratory's Public Affairs Department are the Communications Department, the Center for Science and Engineering Education, and the Community Relations Office. Each successfully developed internal and external relations strategies and reviewed implementation of programs to raise awareness of the Laboratory and its accomplishments in the local community. In a Community Survey conducted by Charlton Research Company, local community leaders and telephone respondents revealed a very favorable view of LBNL and admiration for its scientific advancements.

Communications

The Director's commitment to the staff to communicate personally, regularly and timely was fulfilled by sponsoring lunches with small groups of division representatives, a new interactive e-mail vehicle called "Ask Steve", a new Director's Column to discuss significant issues in *Today at Berkeley Lab*, and the popular all-hands Executive Brown Bags. In addition, Dr. Chu made it a priority to communicate to all Laboratory personnel about the new University of California contract for management and operation of LBNL, including new opportunities and expectations.

The International Year of Physics afforded LBNL an opportunity to showcase its many historical and current achievements in FY 2005, through a year-long program of talks, special events, and the annual Summer Lecture Series which drew strong attendance on and off-site. LBNL also continued its novel "Did You Ever Wonder..." campaign which informs both employees and community members about Laboratory science and the researchers who conduct it (e.g., through bus posters and web content).

Educational Outreach

Berkeley Laboratory's Center for Science and Engineering Education (CSEE) continued to develop, implement, and evaluate programs that use Laboratory resources to improve the quality of mathematics, science, and technology education. These included projects and activities for public science and technology literacy, pre college (K to 12) to community college, undergraduate, and graduate education. CSEE sponsored summer undergraduate interns, high-school interns, and science teachers for curriculum training. LBNL had representation and leadership at the Chabot Space and Science Center, Berkeley Biotechnology Education, Inc., numerous parent/teacher/student associations, and educational and nonprofit groups.

The Laboratory undertook a major effort to work more closely with the Berkeley Unified School District which included school tours, high school student research participation, hosting middle and high school science teachers, providing science lessons to all 5th graders at the 11 public elementary schools in the district, and providing summer research internships for 36 high school students with full support from scientific research groups. LBNL scientific divisions and investigators initiated activities in teacher preparation, wall charts for high school and college classrooms, movies, web-based interactive materials, on-site tours and programs for students, school visits, and workforce development. These programs reached thousands of students and hundreds of teachers.

LBNL hosted over 80 undergraduate students in summer and academic mentored research internships. It also contributed to a program to develop next-generation community college curriculum for energy-efficient, high-performance building operations. This year CSEE coordinated an innovative physics course for 26 high school students from 14 Oakland schools. Students learned physics by studying heating and refrigeration and received concurrent credit from Laney College's environmental control technologies program. Mentored research experiences were provided for high school and middle school mathematics and science teachers and pre-service teachers. School tours programs continued and the Laboratory sponsored a regional DOE Science Bowl competition that hosted over 18 teams from local high schools.

Community Outreach

The Laboratory expanded its community outreach with interactions of federal, state and local elected officials, and initiated several meetings to update them about laboratory activities. Among the list of dignitaries visiting the laboratory this year were Congresswoman Ellen Tauscher, Congressman Mike Honda, Secretary of Energy Samuel Bodman, California Governor Arnold Schwarzenegger, and DOE Office of Science leaders Ray Orbach, James Decker, and Donald Erbschloe. LBNL hosted forums and tours for staff from Washington, D.C., Sacramento, and local municipalities. The Government Relations Office managed a Congressional briefing on the Joint Dark Energy Mission, a DOE/NASA collaboration. LBNL Director Chu and Berkeley Mayor Tom Bates meet or talk quarterly, and the Laboratory's relationship with the City of Berkeley Mayor and council members was strengthened through open dialogue regarding issues the City might have with the Laboratory (e.g., trucking of the dismantled Bevatron through the City), and where LBNL assists the City (e.g., education, first emergency response in proximate areas of the city, energy efficiency in city buildings).

LBNL Management took an active role in community outreach by meeting with local government officials to address community relations, which included participation on local boards and commissions, educational organizations, chambers of commerce, community foundations, environmental groups, and service clubs. "Science on the Hill", the quarterly community LBNL newspaper distributed to all Berkeley residents enhanced communication with community groups, as did the science education outreach program "Berkeley Lab Friends of Science", the summer lecture series broadcasted to the community, and Laboratory representation on the Hills Emergency forum for regional practices in fire-risk reduction.

Diversity Leadership

LBNL's diversity leadership efforts are directed toward enhancing the work environment for all employees as well as assuring diverse hiring pools. The Best Practices Diversity Council (BPDC) assessed diversity-related initiatives undertaken by the divisions (under Division Diversity Action Plans), Human Resources (HR), CSEE, and the Workforce Diversity Office (WFDO). In FY 2005, Director Chu implemented the *Principles for a Diverse Workforce* developed by the BPDC. The 'Principles' are an expansion of the Laboratory's Core Values – Integrity, Responsibility, Respect, Fairness, and Excellence. A diversity expectation is an annual performance element for all employees, with managers and supervisors having additional responsibility to model the Laboratory's commitment. Strategic Recruitment Plans are established and maintained by each division with assistance from the WFDO, and include baseline demographics, recruitment goals, and a scorecard to track progress.

To assist long-term institutional change, Director Chu approved two diversity-related initiatives in FY 2005. The “Principles for a Diverse Community” were established in June 2005 and codify institutional cores values: integrity, respect, fairness, and excellence. A new “Strategic Recruitment Plan,” designed to promote Laboratory-wide diversity, is being piloted in the General Sciences (physics programs) divisions, traditionally one of the most challenging areas. Other divisions are also implementing parts of the program.

LBNL has established a transparent process that requires all division directors to participate in diversity planning by establishing Diversity Action Plans with staffing needs and recruitment targets. Of 2346 LBNL career staff in FY 2005, 32.6% are women (availability 33.5%), 8.1% are African American (availability 6.9%), 5.6% are Hispanic American (availability 5.8%), Asian/Pacific Islander American 19.0% (availability 7.5%), and Native American 0.5% (availability 0.8%).

Another FY 2005 initiative was the creation of a Laboratory Ombudsman, which was added to the responsibilities of the WFDO Head. This position is to serve as an impartial resource available to all Laboratory staff, facilitate the resolution of issues, promote communications trust, and work to improve the quality of the work environment.

Stewardship and Accountability

Approach/Deployment

The Laboratory created a new Office of Institutional Assurance (OIA) to strengthen the approach to stewardship and accountability. The office is to provide oversight of projects, management systems, and operating processes to ensure compliance, best practices and continuous improvement are achieved at LBNL. The position reports directly to the LBNL Deputy Director and by dotted line to the UC Contract Assurance Council. The OIA is comprised of two offices, Contract Assurance and Project Management. The single institutional corrective action tracking system promises greater senior management visibility.

The Office of the Chief Financial Officer (OCFO) was reorganized to strengthen core competencies for accountability, control, and enhanced management capabilities and filled key positions hiring a Budget Officer, Controller, Payroll Manager, and Chief Procurement and Property Officer. Property moved from Facilities to the OCFO and a Travel department was also added. These changes along with system enhancements (PeopleSoft 8.8 upgrade) promise more effective management of funds, quality financial information and tools for strategic planning and implementation.

LBNL continued Activity Based Budgeting to develop budgets for activities that support operations and the laboratory. This process is essential to senior management’s developing of strategic plans. The institutional Spend Plan is a key resource for effective planning and informed decisions. It is submitted to senior management, as required, approximately three to four times per year.

To help with the deployment of the system upgrades a web-based interactive training tool was purchased. Training was offered to LBNL employee to enhance their knowledge and skills in financial management tools and processes and new courses were developed to improve resource management such as account reconciliations.

Recognizing the importance of shared knowledge the Laboratory actively participated in numerous DOE and UC programs and symposiums.

The overall performance for this criterion was decremented from otherwise outstanding performance based on inconsistent/lack of LBNL/BSO management meetings. Late in the rating period the routine meetings between LBNL and BSO senior management became less consistent with meetings being put off due to the non-availability of LBNL management. This impacts the timely sharing of information and working of issues that could impact laboratory performance. It also impacts the ability of the Site Manager to act as the on-site eyes and ears for the Office of Science. While no specific instances of sub-standard performance can be linked with the missed meetings it does call into question Laboratory management's commitment to communicating its stewardship and accountability activities to the customer and is not a trait associated with outstanding performance.

Results

Continued Improvements within the OCFO

The Laboratory continued improvements in the business management area, specifically the Office of the Chief Financial Officer (OCFO). With the hiring of the Budget Officer and the Controller, the laboratory strengthened its oversight and management of internal controls. New procedures were written and training provided to inform and guide the user community and customers through new financial management processes. The closure of corrective action plans were closely observed and completed timely. Also, LBNL implemented an upgrade to the PeopleSoft Financial Management system enabling the user community with a friendlier more expedient management tool. Improved communication in the financial management area was indicated by the establishment of a Finance Network. The group was established to provide critical information to the financial community. There was no information shared about this group with the BSO in FY 2005 and therefore the BSO Business Manager will participate in these meetings in FY 2006. The CFO continued to focus on internal controls, staffing increases, and the realignment of the CFO organization to mitigate risks and improve business practices. This was evidenced by a negative report of reportable items in the Laboratory Director's Assurance Letter, also known as the Federal Manager's Financial Integrity Act.

Results Highlights:

- Injury rates exceeded SC goals, and placed LBNL in ninth place among the ten SC laboratories. The ISMS principle of "Line management responsibility for safety" places some of the responsibility for this on lab leadership.
- The laboratory continues to maintain an almost flat Indirect Cost rate this year and is doing a significantly better job in the accounting area compared to previous years.
- The laboratory's OCFO structure and realignment of business activities demonstrates improvements and strengthening of internal controls and reinforces accountability
- Laboratory management has placed emphasis on the timely resolution of audit findings performed by the Internal Audit Services

The overall performance for this criterion was decremented from otherwise outstanding performance based on various results that the laboratory experienced during FY 2005. The decrement is based upon:

- Increased injury rates
- Delay in hiring the Procurement and Property Officer

Environment, Safety and Health Concerns

In FY 2005, LBNL ranked ninth out of the ten Science (SC) laboratories in their OSHA safety statistics. The average FY2005 Total Recordable Cases (TRC) rate was 1.70, which missed the SC goal of 1.17. The Days Away, Restricted, or Transferred (DART) rate was 0.64, above the SC goal of 0.5. Over the past five years, the percent of ES&H staff relative to Operations staff has shown a steady decline. Staff reductions made in FY 2003, coupled with turnover in division management over the last couple of years have resulted in weaknesses in safety management program effectiveness. Strong senior management action and focus on safe work performance appears to have reversed the increase in incidents that occurred in early months of FY 2005, but it's too early at this time to judge whether recent actions will have a long-lasting impact.

Procurement and Property Concerns

There was a ten month period where the Laboratory did not have a permanent Procurement and Property Officer. While management was correct to take the time to ensure the right candidate was selected, there was nonetheless a decline in functional area performance for which management is responsible. This led to a decrease in the quality of transactions forwarded to the Contracting Officer for approval and deliverables that were at times late and inadequate upon initial presentation to the Contracting Officer. These shortcomings contributed to a lower rating in the procurement function for FY 2005. While the trend on deliverables has improved since the hiring of the Procurement and Property Officer performance through most of the rating period was a cause for concern.

| | |
|---|-------------------------|
| Performance Rating (Adjectival): Outstanding | (Percent): 92.0% |
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OPERATIONS AND ADMINISTRATION

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Performance Area: ENVIRONMENT, SAFETY, AND HEALTH

Performance Objective: Effective ES&H Performance

The Laboratory uses ISM, best practices, certification, and validation of ES&H Management Systems to integrate ES&H into Lab work processes at all levels so those missions are accomplished while protecting the worker, the public and the environment. Special emphasis will be placed on progress towards meeting the FY05- DOE-SC goals for Total Recordable Cases (TRC) and Days Away/Restricted Time (DART). The Laboratory will support and document its assessment against established criteria in the Environment, Safety, and Health ISM Performance Assessment Model, which is incorporated in this Appendix by reference. **(Weight = 100%)**

Performance Measure 1.1: Best Practices and Certified/Independently Validated ES&H Management Systems

To meet efficiency and effectiveness standards of its internal business processes, the Laboratory is satisfactorily progressing towards certification, validation, or accreditation (CVA) of its ES&H Management Systems and implementing actions from its best practices studies. The Laboratory will complete scheduled milestones to assess, develop, and implement best practices in (i) self assessment, (ii) hazard analysis, and (iii) certified/independently validated ES&H management systems. **(Weight = 40%)**

Gradients:

| | |
|----------------|---|
| Unsatisfactory | Little or no effort has been demonstrated towards the achievement of the performance measure. |
| Marginal | Some effort is demonstrated however results fall short of the expectations for the good gradient. |
| Good | CVA progress and best practices implementation are significant but impediments have occurred that delay the completion of some certified, validated, or accredited ES&H management system milestones and best practices milestone (>75% of milestones completed). |
| Excellent | CVA progress is on-schedule with few delays in the completion of certified, validated, or accredited ES&H management system milestones and best practice milestones (>85% of milestones completed). |
| Outstanding | CVA progress is on-schedule with no significant delays in the completion of certified, validated, or accredited ES&H management system milestones and best practice milestones (>95% of milestones completed). |

Assumptions

- ES&H management systems have been identified as part of the FY03 Appendix F Performance Objectives Criteria Measures (POCMs).

- Action plans for the identified ES&H management systems have been reviewed and approved as part of the FY03 Appendix F POCMs.
- CVA of ES&H management systems is a multi-year effort. Future events, issues, or circumstances may result in required or recommended changes to the CVA action plans or in the elimination/ addition of candidate ES&H management systems. Any changes to the action plans or list of candidate ES&H management systems must be mutually agreed to by DOE/BSO and LBNL.
- Best Practice assessments of hazard analysis and self-assessment were completed in FY03. Follow-up actions as identified in the best practice improvement plans are to be completed as part of the FY04 Appendix F POCMs. Best practice actions are identified as best practice milestones.

Performance Narrative:

The overall performance for this metric is at the **Good** rating.

In FY 2005, eleven milestones for six systems were tracked and 9 of the eleven (11) milestones were completed. Performance was satisfactory for each system except for the Safety Management Program.

| System | Number of Milestones |
|--|----------------------|
| - Self-Assessment | 1 |
| - Hazards Analysis | 1 |
| - Instrument Calibration Lab Accreditation | 1 |
| - Occupational Medicine Accreditation | 2 |
| - Emergency Management System | 3 |
| - Safety Management Program | 3 |

The four milestones scheduled for Self-Assessment, Instrument Calibration Lab Accreditation, and Occupational Medicine Accreditation were successfully completed in a timely manner. The Hazards Analysis milestone was successfully completed, but a year later than the original scheduled date. The three Emergency Management milestones were completed with difficulties. All three milestones were scheduled for completion by December 2004, and were not completed until September 2005. The first milestone was to submit an application to the Emergency Management Accreditation Program (EMAP). When the application was submitted, Lawrence Berkeley National Laboratory (LBNL) discovered that EMAP does not accredit National Laboratories. This should have been determined prior to the selection of the standard in FY 2003. The second and third milestones included self-assessment and scheduling of an onsite assessment. Resultant from these activities was the identification of two significant findings that need to be addressed before the Emergency Management Program is fully compliant with the accreditation standard, National Fire Protection Association NFPA Standard 1600. The two findings are related to the development of a Business Continuity Plan.

Only one of the three milestones for the Safety Management System was completed for the Occupational Health and Safety Assessment Standard (OHSAS) 18001 Certification. The milestone was “Start Augmentation of the ISMS program to address the OHSAS 18001 delta”. An augmentation

plan was developed, but little progress was made to complete augmentation actions. It was the Department of Energy (DOE) expectation that the augmentation would be completed so that the 2nd and 3rd milestones could be addressed. These milestones were:

1. Prepare a written OHSAS 18001 program and
2. Assemble a review panel and schedule a review.

In early FY 2005, LBNL communicated with DOE that they encountered difficulties with these milestones. LBNL cited FY 2005 program deficiencies and unforeseen priorities as the reason why augmentation was not completed and work on the 2nd and 3rd milestones was suspended. The path forward concerning safety management certification has not been redefined.

DOE is concerned that the certification project was not well-managed. The Laboratory underestimated program deficiencies and the robustness of the program.

Most of the program deficiencies identified in FY 2005 should have been identified in FY 2003 during the Safety Management System Self-Assessment Review and the FY 2004 OHSAS 18001 Gap Analysis. DOE concludes that the assessment process used and information collected did not accurately reflect the system's state of readiness for certification. The safety deficiencies identified during FY 2005 self assessments and the numerous FY 2004 Occupational Safety and Health Assessment (OSHA) Audit findings are indications that the safety system is not robust. The decline in FY 2005 safety performance further suggests that the safety program needs to be more effective.

DOE is concerned that the significant safety staff reductions made in FY 2003 without an adequate program assessment reduced the effectiveness of the safety management program. Laboratory management reduced safety staff from 9 people to 5 people in 2003. The workload was redistributed to provide safety oversight, but was not as effective as the previous program structure used. LBNL was without a full-time safety group leader from December 2003 until January 2005.

The FY 2005 LBNL safety self-Assessments and DOE assessments have helped to better define the safety management system weaknesses and resulted in additions to the safety staff. A comprehensive safety management program assessment is still needed to establish performance standards, mitigate risks, and serve as a basis for corrective action. This is necessary to determine the path forward for certification.

The status of other ES&H programs is not addressed in this evaluation. However, BSO is concerned that adequate LBNL staff and resources are allocated to implement all of LBNL's ES&H program requirements.

| | |
|--|-------------------------|
| Performance Rating Measure 1.1 (Adjectival): Good | (Percent): 80.4% |
|--|-------------------------|

Performance Measure 2.1: Integrated Safety Management System (ISMS) effectiveness, measured through the ISMS Balanced Scorecard (BSC).

The Laboratory has an effective ISM System that protects Lab employees, the public and the environment while supporting the scientific mission of the Lab.

Note: ISMS includes environmental protection as well as the safety and health of workers and the public. **(Weight = 60%)**

Gradients:

Performance is rated through the ISM Balanced Scorecard. (The balanced scorecard gradients are in the ES&H ISM Performance Assessment Model agreed to by LBNL and BSO. They are incorporated by reference). Adjectival rating is based on the following percent score:

| Balanced Scorecard Metrics Score | Gradient |
|----------------------------------|-----------------|
| Unsatisfactory | < 60% |
| Marginal | ≥ 60% but <70% |
| Good | ≥ 70% but < 80% |
| Excellent | > 80% but <90% |
| Outstanding | ≥ 90% |

- Unsatisfactory Significantly below the standard of performance; deficiencies are serious, and may affect overall results, immediate senior management attention, and prompt corrective action is required.
- Marginal Below the standard of performance; deficiencies are such that management attention and corrective action are required.
- Good Meets the standard of performance; assigned tasks are carried out in an acceptable manner – timely, efficiently, and economically. Deficiencies do not substantively affect performance.
- Excellent Exceeds the standard of performance; although there may be room for improvement in some elements, better performance in all other elements offset this.
- Outstanding Significantly exceeds the standard of performance; achieves noteworthy results; accomplishes very difficult tasks in a timely manner.

| Balanced Scorecard | ISM Functions | Performance Expectations | BSC Measurements | Weighting Factor | Goals/Ratings |
|--|------------------------------------|--|---|---|--|
| Customer | Scope of Work and Planning | Missions are effectively translated into work. Responsibility for safety by managers and staff is effectively communicated. | <i>Self-Assessment ISM Criterion E2</i> , There is ongoing and systematic ES&H communication between management and staff. | 1X | Strong ES&H communication in organization. |
| | Feedback and Improvement | | <i>Self-Assessment ISM Criterion E11</i> , Managers and staff are regularly involved in ES&H feedback and improvements. | 1X | Customers actively engaged in ES&H activities. |
| | | | Internal customers are satisfied with EH&S services and programs that support a safe workplace and protection to the environment and public. | Annual Operations Scorecard ratings for EH&S performance in quality, timeliness, cost, communication, innovation and support of missions. | 1X |
| Financial | Scope of Work and Planning | There is cost effective delivery of ES&H services and programs. Value is added while controlling costs. | <i>Self-Assessment ISM Criterion E1</i> , Resources are effectively allocated to address ES&H considerations. | 1X | Effective allocation of ES&H resources. |
| | | | Implement the performance goals established in the FY05 performance year mutually agreed on by LBNL and BSO. (see note 1) | 1X | |
| Operations (Internal Business Process) | Hazard Identification and Analysis | There is an effective process to identify, analyze and categorize LBNL hazards. | <i>Self-Assessment ISM Criterion E4</i> , Divisions have a process to identify, analyze, and categorized hazards associated with work. | 1X | Hazard ID and analysis system in place & effective. |
| | Implementation of Hazard Controls | Administrative and engineering controls to prevent/mitigate hazards are effectively tailored to the work being performed. Applicable safety standards, requirements, and safety envelopes are established. | <i>Self-Assessment ISM Criterion E5</i> , Engineering and other safety controls are in place and maintained; <i>Criterion E6</i> , Administrative controls are in place and maintained. | 1X | Controls checked and effective. |
| | Perform Work | LBNL operations and activities will minimize accidents and injuries. | Progress shall be measured towards reducing the TRC and DART rates to the 25 th percentile of the 2001 SIC 873 large establishment rates by FY2005 (see note #1). | 5X | TRC and DART rates are reduced to the 25 th percentile of the 2001 SIC 873 rates (see note #1). |
| People | Feedback and Improvement | Employee development promotes staff competency and professional certifications. | <i>Self-Assessment ISM Criterion E9</i> , Staff is proficient in performing work safely. | 1X | % Completion of required training. |
| | | | Implement performance goals established in the FY04 performance year (see note #1). | 1X | FY04 performance goals are implemented (see note #1). |
| Ethics Governance Compliance | Perform Work | External reviews by regulatory agencies show that LBNL is in compliance with regulatory requirements. | Number of major non-compliance issues is below internal control number. | 4X | Incidents of noncompliance under control number. |
| Overall Percent Score | | | | Total weighted numerical value/ 54 (total possible score) | |

The Balanced Scorecard (BSC) was used to evaluate both Integrated Safety Management (ISM) and business effectiveness using the following categories (1) Customer, (2) Finance, (3) Operations, (4) People, and (5) Ethics, governance, and compliance. The metrics were weighted to provide increased emphasis on specific aspects of operations and compliance. The performance was scored for each measure and category using a three-point scoring system (3 points= satisfactory, 2 points = partial; 1 point = marginal). Two measures, Total Recordable Cases (TRC) and Days Away, Restricted, or Transferred (DART) rates, and Environmental Compliance, were weighted five times and four times respectively. The total performance score is the percentage of the rated score over the total possible score. The percent score provides the basis for the gradient rating for the Performance Measure for the ISM System.

Performance Narrative:

Balanced Scorecard Summary

| BSC Category | ISM Score Pts. | BSC Score Pts. | Total Possible Points | Percent |
|---|-----------------------|-----------------------|------------------------------|----------------|
| Customer | 8.3 | 8.3 | 9.0 | (90%) |
| Financial | 6.0 | 6.0 | 6.0 | (100%) |
| Operations | 11.0 | 11.0 | 21.0 | (52%) |
| People | 6.0 | 6.0 | 6.0 | (100%) |
| Ethics and Governance-Compliance | 12.0 | 12.0 | 12.0 | (100%) |
| Total | 43.3 | 43.3 | 54 | 80.2% |

Customer (Scored 8.3 Pts out of 9 Pts)-weighted 1X

There are three BSC measurements for the customer category.

Division self assessment results indicate that good mechanisms to communicate ES&H issues exist in divisions. However, improvements to the LBNL’s Lessons Learned Program would make these communications more effective. A Lessons Learned Process Improvement Team (PIT) was formed early during the performance period, but the team has not completed an improvement plan. **(2.8 Pts)**

Managers participate in ES&H training, inspections, corrective actions, hazards reviews and group committee discussions. Several LBNL safety self-assessments and DOE assessments indicate that hazards identification needs improvement. Often division inspections do not identify some OSHA non compliances due to the limited OSHA expertise of the inspectors. Informal training sessions have been instituted to address this issue. Also, it was identified that line managers need more training in root cause analysis to improve the quality of accident investigations and corrective action plans.

Classes have been developed to address these concerns. The rate of completion for ES&H required training is above 90%; however, follow up to the formal training is need to ensure competency. **(2.8 Pts)**

LBNL conducted a *Safety Culture and ES&H Satisfaction Survey*. The expectation was that feedback would be positive in all areas. There were 777 respondents or roughly 25% of the workforce. Under the “Safety Culture” section, the survey results indicate that people feel that they work in a safe environment, and safety is a key value at LBNL. However, they feel that the communications of the Lessons Learned Program need to improve in frequency and content. They also feel that injury reports should not have negative repercussions. DOE operational awareness activities validate these views. Under the “Line Management Commitment” section, it was identified that line management needs to give feedback to employees (good or bad) on safety performance and inspect work areas of immediate reports for housekeeping and safety on a weekly basis. Management needs to discuss accidents and learn from them without assigning blame. EH &S staff and division safety coordinators were found to substantially contribute to safety in the workplace and are knowledgeable and helpful. **(2.7 Pts.)**

Financial (Scored 6 Pts. out of 6 Pts.)- weighted 1X

There were two measurements for the financial category. The first was that there is cost effective delivery of ES&H services and programs. Value is added while controlling costs. This measurement was met.

All divisions allocated resources for ES&H. Some divisions more effectively use resources in the identification, control and elimination of hazards than others. Eighty (80) percent of the divisions have resolved ninety (90) percent or more of the corrective actions in the Laboratory Corrective Actions Tracking System (LCATS). One division has resolved fewer than seventy-five (75) percent. It is also noted that several divisions have corrective actions open from 2001. A plan should be developed to bring these corrective actions to closure. **(3 Pts.)**

The second measurement, to implement cost efficiency recommendations in two ES&H programs, was met. The first program was the reduction in radioactive air emissions compliance monitoring which resulted in an annual cost savings of \$80, 000. The second program was out-sourcing of LBNL clinical analyses which resulted in an annual cost savings of \$78, 340. **(3 Pts.)**

Operations (Scored 11 Pts. out of 21 Pts.)

There were three operations measurements. The third measurement is weighted five times as much as the other measures in the BSC to place emphasis on the accident/injury rates.

The first measurement was that an effective system is in place to analyze and categorize hazards. This measurement was met. **(3 Pts.)**

The second measurement was that administrative and engineering controls to prevent/mitigate hazards are tailored to the work being performed, and applicable safety standards, requirements, and safety envelopes are implemented and maintained. This measurement was met. **(3 Pts.)**

The third measurement was that LBNL operations and activities will minimize accidents and injuries. The Office of Science (SC) goals of a TRC rate of 1.1 and a DART rate of 0.5 set the outstanding

rating. The LBNL TRC performance was 1.70, at the marginal expectation, while the DART performance was 0.64, at the partial expectation.

The LBNL TRC and DART rates sharply increased in the 2nd Quarter and remained above the FY 2004 rates and SC goals throughout the performance period. LBNL's management response to the elevated rates resulted in reversing the upward trend. A near-term and long-term plan was developed to reduce the accident/injury rates, and to reduce the increased number of other incidents which were the result of non compliances with laboratory procedures and requirements.

The 4th quarter TRC rate, was 1.43, and the DART rate was 0.24. **(1 Pt. x 5 or 5 Pts.)**

People (Scored 6 Pts. out of 6 Pts.)-weighted 1X

There were two measurements. The first was that staff is proficient in performing work safely. The expectation was met. Ninety-one (91) percent of career employees, participating guests, and visitors have completed their required ES&H training. **(3 Pts.)**

The second measurement was that employee development promotes staff competency and professional certifications. The performance goal to fund and track staff professional certification at least at the fifty (50) percent level was met. **(3 Pts.)**

Ethics and Governance and Compliance (12 Pts. out of 12 Pts.)-weighted 4X

The performance measurement was that external reviews by regulatory agencies show that LBNL is in compliance with regulatory requirements at or below the internal control number of two (2). It is weighted four (4) times as much as the other BSC measures for emphasis. The measurement was met. There were 2 Notices of Violation. One violation was a small spill and the other involved discrepancies in the compressed gas cylinder inventory.

There were 3 spills that did not result in Notices of Violation, and one event involving the improper handling of hazardous waste in a dumpster. **(3 Pts x 4 or 12 Pts.)**

| | |
|---|-------------------------|
| Performance Rating Measure 2.1 (Adjectival): Excellent | (Percent): 80.2% |
|---|-------------------------|

| | |
|--|-------------------------|
| Overall ES&H Performance Rating (Adjectival): Excellent | (Percent): 80.3% |
|--|-------------------------|

Additional Observations

A Lessons Learned Process Improvement Team (PIT) has been established, but an improvement plan has not been completed.

The BSO expectations of LBNL related to improved safety performance are as follows:

1. A path forward for program improvements and certification based on a comprehensive assessment of its safety management program and staffing;
2. Adequate staff and resources are allocated to implement all of LBNL's ES&H programs; and,
3. That the Lesson Learned PIT is completed and the corrective action plan implemented.

Performance Area: PROJECT/FACILITIES AND CONSTRUCTION MANAGEMENT

Performance Objective: Effective Project/Facilities and Construction Management

The Laboratory uses Physical Assets Planning and Real Property, Construction Project Management, and Facilities and Infrastructure Management to achieve excellence in the management of the Facilities at LBNL. Special emphasis will be placed on identifying, prioritizing and reducing the Laboratory’s deferred maintenance backlog, and achieving the FY05 target set for the Maintenance Investment Initiative (MII). Asset Condition Index (ACI) and Asset Utilization Index (AUI) by the DOE Office of Science. The Laboratory will support and document its assessment against established criteria contained in the Project/Facilities and Construction Management Performance Assessment Model, which is incorporated in this Appendix by reference. **(Weight = 100%)**

Gradients:

| Balanced Scorecard Metrics Score | Gradient |
|----------------------------------|-----------------|
| Unsatisfactory | < 60% |
| Marginal | ≥ 60% but <70% |
| Good | ≥ 70% but < 80% |
| Excellent | > 80% but <90% |
| Outstanding | ≥ 90% |

Gradient Description

Unsatisfactory Significantly below the standard of performance; deficiencies are serious, and may affect overall results, immediate senior management attention, and prompt corrective action is required.

Marginal Below the standard of performance; deficiencies are such that management attention and corrective action are required.

Good Meets the standard of performance; assigned tasks are carried out in an acceptable manner – timely, efficiently, and economically. Deficiencies do not substantively affect performance.

Excellent Exceeds the standard of performance; although there may be room for improvement in some elements, better performance in all other elements offset this.

Outstanding Significantly exceeds the standard of performance; achieves noteworthy results; accomplishes very difficult tasks in a timely manner.

Performance Narrative:

Lawrence Berkeley National Laboratory (LBNL) activities in the areas of Physical Assets Planning and Real Property, Construction Project Management, and Facilities and Infrastructure Management are rated as **Outstanding** for FY 2005.

Balanced Scorecard Overall Results:

| Performance Perspectives | Appendix F Weighting Total Points (1st & 2nd Qtr) | Results for Midyear | Appendix F Weighting Total Points (3rd & 4th Qtr) | Results for End of Year |
|---------------------------------|--|----------------------------|--|--------------------------------|
| 1. Customer | 25 | 25 | 22.5 | 17.5 |
| 2. Finance | 23 | 23 | 23 | 23 |
| 3. Internal Process | 47 | 47 | 49.5 | 49.5 |
| 4. Ethics/Governance/Compliance | 5 | 5 | 5 | 5 |
| 5. People | 0 | 0 | 0 | 0 |
| Total | 100 | 100 | 100 | 95 |

For midyear, the Facilities Division achieved all Performance Measures in each performance objective for a total of 100 points.

A 3rd and 4th Quarter performance measure for setting up a Liaison Program for communicating with Associate Laboratory Directors was not achieved. Limited effort has gone to the Liaison Program because of ongoing changes to the Laboratory Senior Management structure.

For end of year, the Facilities Division achieved 95 points out of a total of 100 points.

Notable Achievements:

- Ten Year Site Plans submitted in November 2004 for FY 2004 and May 2005 for FY 2005.
- Leases and disposition approvals: Building 977 (Potter Street) Life Science and Physical Biosciences, Building 913 (Greenhouse) Earth Science Division Mesocosm Project and the disposition of Building 29D.
- The laboratory received Approval of Mission Need CD-0 in June, 2005 for the Seismic and Structural Safety of Buildings, Phase I project. This project will address the seismic and structural safety of two of the highest risk LBNL structures, Buildings 50 and 74.
- An external review of LBNL's Earned Value Management System (EVMS) was conducted with an extraordinarily positive outcome. The team's findings found no corrective actions needed, and recommended that the Laboratory's EVM system be certified.
- DOE performed Replacement Plant Value (RPV) validation study in November 2004 and in addition to meeting the DOE standards, DOE Office of Science (SC) and Office of Engineering and Construction Management (OECM) stated that LBNL's process was a "best business practice."

| | |
|---|-------------------------|
| Performance Rating (Adjectival): Outstanding | (Percent): 95.0% |
|---|-------------------------|

Performance Area:

FINANCIAL MANAGEMENT

Performance Objective: Effective Financial Management

The Laboratory will implement effective financial management practices in accordance with DOE policies, procedures, and requirements and provide quality customer service that supports the mission of the Laboratory. The Laboratory will support and document its assessment against established criteria contained in the Financial Management Performance Assessment Model, which is incorporated in this Appendix by reference. **(Weight = 100%)**

Gradients:

| Balanced Scorecard Metrics Score | Gradient |
|----------------------------------|-----------------|
| Unsatisfactory | < 60% |
| Marginal | ≥ 60% but <70% |
| Good | ≥ 70% but < 80% |
| Excellent | > 80% but <90% |
| Outstanding | ≥ 90% |

Unsatisfactory Significantly below the standard of performance; deficiencies are serious, and may affect overall results, immediate senior management attention, and prompt corrective action is required.

Marginal Below the standard of performance; deficiencies are such that management attention and corrective action are required.

Good Meets the standard of performance; assigned tasks are carried out in an acceptable manner – timely, efficiently, and economically. Deficiencies do not substantively affect performance.

Excellent Exceeds the standard of performance; although there may be room for improvement in some elements, better performance in all other elements offset this.

Outstanding Significantly exceeds the standard of performance; achieves noteworthy results; accomplishes very difficult tasks in a timely manner.

Performance Narrative:

The Lawrence Berkeley National Laboratory (LBNL) received an overall rating in the Financial Management area of **Outstanding** at 98%. Substantial progress resolving the issues from FY 2004, additional internal control measures, and the implementation of the new Department of Energy (DOE) financial system Standard Accounting and Reporting System (STARS) equated to an overall **Outstanding** rating for laboratory performance against the FY 2005 performance measures.

Significant improvements in the area of reengineering and realignment, including reconciliation of General Ledger accounts and improved disbursements controls were achieved to improve from last years Excellent rating. Specifically, more emphasis was placed on establishing processes and safeguards to mitigate issues that occurred in FY 2004.

The Chief Financial Officer's (CFO's) staff worked very hard this year to meet several Department of Energy (DOE) initiatives, along with implementing and processing the financial transition plan from Contract 98 to Contract 31. While the Chicago Operations Office (CH) converted to the new Funds Control Distribution System (FCDS), the CFO staff was required to revise how they submitted their reimbursable contract modification request. The implementation of the new Electronic Portfolio Management Environment (ePME), as the budget submission requirement for most programs, also required some significant changes within the Budget Office. Finally, the implementation of STARS has, and continues to require, the CFO's staff to endure numerous changes and revisions in the processes of how they submit their costs, and significant delays to when they received the monthly contract modification. These situations often required the CFO's staff to produce their monthly financial reporting in a shorter timeframe than usually allowed. Throughout the year, they demonstrated professionalism and diligence by continually meeting the shortened deadlines. This was a significant effort, and with the excellent coordination and teamwork between LBNL and DOE, all the financial management transitions were handled expeditiously.

Disbursement, Collections and Reconciliations have been completed in a timely manner.

The increase of staff in the CFO's organization has strengthened core competencies for accountability, control and other enhanced management capabilities. Highly experienced staff, including a budget officer, controller and payroll manager was hired. Along with the development of policies and procedures, and an enhanced training program, the CFO's staff will be able to more efficiently and effectively maintain its financial management responsibilities.

During the year, LBNL identified a weakness in their financial reporting of the Cost of Work in Progress (CWIP). They identified the problem, and immediately took corrective actions to ensure any potential issues were rectified.

LBNL has demonstrated good progress in performing prompt and timely corrective actions on audit recommendations. There is staff dedicated to perform the function. Moreover, LBNL has enhanced its audit tracking system. It provided more details on the justification for change of completion dates of corrective actions. LBNL has also indicated that it will be developing policies and procedures that address audit resolution and closure in FY 2006.

Areas of concern:

During the past year, LBNL enhanced their internal control systems to ensure costs do not exceed funds. However, the process still appears to be mostly manual and labor driven. In the future, we would hope to see an automated system that would eliminate the significant labor that is currently required.

While there has been substantial improvement in account reconciliations, performance is not yet 100%.

The audit tracker for LBNL showed that LBNL has 3 recommendations that have been opened for more than a year. The closure of these recommendations seems to depend on revisions to the Laboratory information system and inventory systems. Performance expectations for FY 2006 are the timely resolution and closeout of remaining audit findings.

| | |
|---|-------------------------|
| Performance Rating (Adjectival): Outstanding | (Percent): 98.0% |
|---|-------------------------|

Performance Area: HUMAN RESOURCES

Performance Objective: Effectiveness of HR Operations

Human Resources programs, services and processes support the operational needs and scientific mission of the Laboratory. The Laboratory will support and document its assessment against established criteria contained in the Human Resources Performance Assessment Model, which is incorporated in this Appendix by reference. **(Weight = 100%)**

Gradients:

| Balanced Scorecard Metrics Score | Gradient |
|----------------------------------|-----------------|
| Unsatisfactory | < 60% |
| Marginal | ≥ 60% but <70% |
| Good | ≥ 70% but < 80% |
| Excellent | > 80% but <90% |
| Outstanding | ≥ 90% |

Gradient Description

- Unsatisfactory Significantly below the standard of performance; deficiencies are serious, and may affect overall results, immediate senior management attention, and prompt corrective action is required.
- Marginal Below the standard of performance; deficiencies are such that management attention and corrective action are required.
- Good Meets the standard of performance; assigned tasks are carried out in an acceptable manner – timely, efficiently, and economically. Deficiencies do not substantively affect performance.
- Excellent Exceeds the standard of performance; although there may be room for improvement in some elements, better performance in all other elements offset this.
- Outstanding Significantly exceeds the standard of performance; achieves noteworthy results; accomplishes very difficult tasks in a timely manner.

Performance Narrative:

Lawrence Berkeley National Laboratory's (LBNL's) performance for the Human Resources (HR) functional area warrants a rating of **Excellent** at 88% for FY 2005.

Under the HR measure, the areas of focus for FY 2005 were documented in the HR Balanced Scorecard (BSC), with specific activities identified under the categories of "Customer", "Ethics/Governance/Compliance", "Finance", "People", and "Operational/Internal Process". It was expected that LBNL would continue to apply a standards-based approach in conducting the BSC activities, which involves identification of a standard, assessing LBNL's "gap" relative to that standard, identifying the actions necessary to close the gap, and achieving the standard through implementation.

Under the "Customer" category, LBNL conducted a customer survey, in which it was determined that processes were considered cumbersome, with multiple levels of review and approval, and use of incompatible databases. The Electronic Process Improvement Project (EPIP) was established, consisting of three sub-projects – "Electronic Personal Action Forms"(EPAF), "Graduate Student Research Assistant (GSRA) Process Re-Engineering" (for tracking time applied to projects to ensure accurate payroll), and "Manage Labor Relations"(to capture grievance metrics under the data warehouse). The Laboratory set goals for FY 2005 relative to two of the sub-projects, and in applying a 6-Sigma project-management approach, reached the point of transition on one EPAF deliverable, eliminated one, and initiated the gap analysis for the GSRA sub-project.

Under the "Ethics/Governance/Compliance" category, HR experienced a minimum of activity in 2005, with one external audit that didn't proceed past the data-gathering stage before it was deemed irrelevant to LBNL, and 3 internal audits, which resulted in nine findings, eight of which were dispensed with in a responsive manner, primarily through amendment of the Regulations and Procedures Manual (RPM). One finding related to the time reporting aspects of the GSRA Re-Engineering Project remains open.

Under the "Finance" category, HR has struggled the last few years to identify relevant metrics for assessing staffing needs against available funding. This has prevented them from establishing the standard to which they will manage. In FY 2005, one metric was dropped from the Saratoga Institute cadre of metrics, another was deemed inaccurate by LBNL and replaced with one more suitable. While the intent initially was for LBNL to identify the metrics, assess the gap against the industry standard, determine the necessary transition, and ultimately meet their cost efficiency targets, the gap-transition-implement effort has been primarily focused on identifying the potential metrics out of those available and analyzing their "fit". Two appeared to rise to the surface, one in terms of the percent of total operating costs devoted to direct HR costs, and the other in the HR costs per employee. Of these two, three years of data indicates that LBNL's costs exceed the industry standard, though the Laboratory considers its higher costs a positive reflection on the value placed on the HR function. The next step in this effort is making a management decision as to where LBNL feels it should be relative to the industry standards and establishing firm targets.

Under the "People" category, HR's activities consisted of further developing the Employee Satisfaction Index under the Laboratory's internal BSC by defining each aspect of three measures that would be calculated under the index, launching supervisory training and establishing a framework for the Laboratory's leadership development program. In regard to the Employee Satisfaction Index, the

measures of Voluntary Turnover, Complainants and Grievants, and Employee Sick Leave were the focus. For each measure, the Laboratory defined purpose, applicability, method of calculation, frequency and means of data collection, and measure owners, as well as other aspects to the measures. In addition, the measure results were incorporated into HR's data warehouse, graphically depicting LBNL's data relative to Saratoga Institute benchmark data.

In regards to the training and development activities, LBNL made significant progress in its efforts to build an integrated program. The Laboratory now has in place the Berkeley Lab Institute (BLI) as an umbrella organization over the training and leadership development services available to the Laboratory population. A staff has been dedicated to BLI, which currently is working with Divisions on training plans to meet their developmental needs. A framework has been developed in which the BLI will serve as a resource for the courses available through the laboratory, at the University of California (UC) and other offsite locations, provide resources such as training rooms, a library, and facilitation services. In addition, the BLI will manage the "CORE" supervisory training program, launched as a BSC Activity this year, which offers ten courses, attended by over 300 employees in FY 2005.

Under the "Operational/Internal Process" category, emphasis was placed on preparing for the accreditation pilot anticipated for FY 2006 by conducting a preliminary self-assessment of the HR program against the standards developed by the "Taskforce for HR Department Accreditation", chartered by the DOE Contractors' HR Council. LBNL conducted a high-level self-assessment indicating if the standard was met or not, and identifying generally where they fell short if the standard was not being met.

In addition to the accomplishments above, and as a positive step toward meeting the accreditation standards for Workforce Planning, LBNL initiated an expanded "Performance and Salary Review" process in FY 2005 which further distinguishes employees with high management potential into "Star" and "Key" employees. This initiative establishes a means of succession planning for the Laboratory, and channels the identified employees into the leadership development programs now established under the Berkeley Lab Institute. This has been an area of acknowledged weakness for LBNL for several years and is a positive indication that the Laboratory is moving toward a fully integrated workforce planning approach in its management.

| | |
|---|-------------------------|
| Performance Rating (Adjectival): Excellent | (Percent): 88.0% |
|---|-------------------------|

PERFORMANCE AREA: INFORMATION TECHNOLOGY MANAGEMENT / CYBERSECURITY

Performance Objective: Information Technology Management / Cybersecurity

The Laboratory will provide a well managed information technology infrastructure that ensures the availability and security of information systems compatible with customer needs and consistent with the DOE certification and authorization requirements. The Laboratory will support and document its assessment against established criteria contained in the Information Technology Management/Cybersecurity Assessment Model (ITM/CSAM), which is incorporated in this Appendix by reference. **(Weight = 100%)**

| Balanced Score Card Activity | Metric | Gradient/Rating | Actual Points |
|------------------------------------|--|--|---------------|
| Customer | 1.1 Credibility, Trust, and Satisfaction | 1.0-5.0 | 5 |
| Financial | 2.1 Cost Effective Products and Services | 1.0-5.0 | 4 |
| Operational Internal Processes | 3.1 High Quality Products, Services, and Infrastructure | 1.0-5.0 | 4 |
| Ethics, Governance, and Compliance | 4.1 Laboratory values expressed in ethical action 4.2 Compliance with regulations and contractual commitments | Percent rating divided by 20 to yield a number in the range of 0.0-5.0 | 5 |
| | 4.3 Obtains IT Systems Certification | Yes = 75 points No = 0 points | 75 |
| People | 5.1 Right people right skills today and tomorrow | Percent rating divided by 20 to yield a number in the range of 0.0-5.0 | 3 |
| | 5.2 Highly Motivated, Satisfied Employees | | |
| | 5.3 Safe work environment | | |
| TOTAL POINTS | | | 96 |

ITM/CSAM Scoring Table

| ITM/CSAM Points Earned | Translation to Appendix F Contractual Scoring | Adjectival Rating |
|------------------------|---|-------------------|
| > 95 | ≥ 90% | Outstanding |
| > 85 | > 80% but < 90% | Excellent |
| > 75 | ≥ 70% but < 80% | Good |
| 75 | ≥ 60% but < 70% | Marginal |
| < 75 | ≤ 60% | Unsatisfactory |

Performance Narrative:

Most of the points were obtained because LBNL obtained the very important Authority to Operate (ATO) by the deadline.

- 1.1 Credibility, Trust, and Satisfaction score supported by results from customer surveys, the results had a score of 9.78 which translates to a score of 4.89.
- 2.1 Cost Effective Products and Services – Cost savings were realized but not to a significant degree.
- 3.1 High Quality Products, Services, and Infrastructure score supported by results from customer survey, the results had a score of 3.92.
- 4.1 Laboratory values expressed in ethical action & 4.2 Compliance with Regulations and contractual commitments – six out of six milestones met which is 100% divided by 20 is 5.
- 4.3 Obtains IT Systems Certification – the Authority To Operate was achieved before its due date.
- 5.1 Right people right skills today and tomorrow – considered that ~99% of the ITSD employees had completed development plans but is not an indicator of training completed.
- 5.2 Highly Motivated, Satisfied Employees & 5.3 Safe Work Environment – score supported by results from balanced score card, the results had an average score of 91.9 divided by 20 would be 4.6.

The averaged score for the three measures of 3 because the Laboratory did not provide an indication of a significant accomplishment for 5.1.

| | |
|---|-------------------------|
| Performance Rating (Adjectival): Outstanding | (Percent): 93.0% |
|---|-------------------------|

Performance Area: PROCUREMENT

Performance Objective: Procurement Excellence

The Laboratory will maintain a procurement system that ensures Procurement programs incorporate best practices as applicable, promotes customer service, and operates in accordance with policies and procedures approved by DOE and the requirements of the Prime Contract. The Laboratory will support and document its assessment against established criteria contained in the Procurement Assessment Model (PROAM), which is incorporated in this Appendix by reference. **(Weight = 100%)**

Overall Scoring

The total earned points for each core measure/critical activity are added together to arrive at the overall score for the organization. One hundred (100) total points are available. The table below is used to convert the final PROAM score to FY 2005 Prime Contract Appendix B and F Contractual Scoring:

- A score ≥ 95 points = Outstanding
- A score ≥ 90 points = Excellent
- A score ≥ 80 points = Good
- A score ≥ 70.4 points = Marginal
- A score < 70.4 points = Unsatisfactory

Procurement Scoring Table

| PROAM Points Earned | Translation to Appendix F Contractual Scoring | Adjectival Rating |
|---------------------|---|-------------------|
| 98.5 - 100 | 98 | Outstanding |
| 96.8 - 98.4 | 95 | |
| 95.0 - 96.7 | 92 | |
| 93.8 - 94.9 | 88 | Excellent |
| 92.0 - 93.7 | 85 | |
| 90.0 - 91.9 | 82 | |
| 86.6 - 89.9 | 78 | Good |
| 83.4 - 86.5 | 75 | |
| 80.0 - 83.2 | 72 | |
| 76.8 - 79.9 | 68 | Marginal |
| 73.6 - 76.7 | 65 | |
| 70.4 - 73.5 | 62 | |
| 67.2 - 70.3 | 58 | Unsatisfactory |
| 64.0 - 67.0 | 55 | |
| 60.8 - 63.9 | 52 | |

Performance Narrative:

Lawrence Berkeley National Laboratory (LBNL) Procurement, measured against the objective standards in Appendix B, earned a rating of **Good** at 75% for FY 2005 with a total of 86 points earned.

Measure 1.1.a, Assessing System Operations

During FY 2005, the Procurement department established a new, risk-based self-assessment system to evaluate transactions. The intent of the new system is to ensure compliance with applicable contractual, statutory, regulatory, policy, and procedural requirements. While the new system is a sound approach, it was not finalized until September 20, 2005 making it impossible for the Department of Energy (DOE) to assess the overall effectiveness of its deployment and results. During FY 2005, portions of the new system were in place; however, some areas required additional management attention:

- (1) The initial Request for Proposal for the Gamma Ray Energy Tracking In-Beam Nuclear Array (GRETINA) was used to develop a subcontract draft that was open-ended to the extent that it was difficult to assess whether the Contract Review Board (CRB) process should apply. The represented contracting approach gave rise to concerns regarding LBNL capability to develop and control complex contracting situations.
- (2) The root cause analysis performed for both the One-Time Purchase and the Group Manager reviews suggests that the cause of the errors are “lack of training and experience from the relatively new Buyers and Subcontractor Administrators and inattention to details”. After review of the self-assessments, it is unreasonable to believe that everyone in Procurement is a new buyer.
- (3) Fiscal Year 2005 was the first year of the new self-assessment methodology. Files were not officially scored and only comments regarding non-compliance issues were noted. Not all of the comments, were followed-up with corrective actions.

Measure 1.2.a, Measuring Effectiveness

LBNL did meet the Balanced Scorecard goals in this area; however, since cycle time is increasing and rapid procurement transactions are decreasing, additional information is needed in future reports to assess the change in trends.

Measure 1.3.a, Measuring Supplier Performance

LBNL did implement a new supplier management assessment program under the purview of the Small Business and Supplier Management Office. While only 1/3 of their key supplier’s were rated as very good or better, it is the first time LBNL will be able to measure industry to identify gaps among unsatisfactory, marginal, good, very good, and exceptional performance. The supplier management program has the potential to impact four related processes: (1) Develop sourcing strategies, (2) Develop and maintain contracts, (3) Order materials and services, and (4) Appraise and develop suppliers.

Measure 1.4.a, Meeting Socioeconomic Commitments

While LBNL did not meet the FY 2005 socioeconomic goals, the framework is now in place to make significant progress in this area. A new Small Business & Supplier Management Office was established to promote subcontracting opportunities. Additionally, the new Supplier Management Program includes, as an objective, to maximize opportunities for small business concerns by improving small businesses’ understanding of LBNL requirements. A comparison between FY 2004 to FY 2005 is as follows:

| | <u>FY 2004</u> | <u>FY 2005</u> | <u>FY 2005 Goals</u> |
|------------------------------|----------------|----------------|----------------------|
| Small Business (SB) | 37.4% | 42.9% | 50.0% |
| Small Disadvantaged Business | 6.5% | 5.5% | 15.0% |
| Woman Owned SB | 3.5% | 4.5% | 10.0% |
| HUBZone | 0.6% | 1.6% | 3.0% |
| Veteran-Owned SB | 0.2% | 0.8% | 3.0% ¹ |
| Service Disabled Veteran SB | N/A | 0.5% | 3.0% ² |

Measure 2.1.1 Customer Satisfaction and Measure 4.1.a Employee Satisfaction

Both the Customer and Employee surveys took an unusual downward trend with no evidence of analysis performed or corrective action. BSO’s performance expectations of LBNL is that a management plan be developed following analysis of results, which offers potential solutions.

Other Observations

Additionally, the Contracting Officer performed a special review of ratifications which uncovered internal control weakness. While LBNL was responsive in correcting system deficiencies, the concern remains that management does not have sufficient checks and balances to reduce the number of ratifications.

| | |
|--|-------------------------|
| Performance Rating (Adjectival): Good | (Percent): 75.0% |
|--|-------------------------|

¹ Not included under contract “31”

² Not included under contract “98”

PERFORMANCE AREA: PROPERTY MANAGEMENT

Performance Objective: Personal Property Excellence

The Laboratory will maintain a personal property system that ensure Property programs incorporate best practices as applicable, promotes customer service, and operates in accordance with policies and procedures approved by DOE and the requirements of the Prime Contract. The Laboratory will support and document its assessment against established criteria contained in the FY 05 Property Management Balanced Scorecard which serves as the Property Management Assessment Model, **and is incorporated in this Appendix by reference. (Weight = 100%)**

Gradients:

| Balanced Scorecard Metrics Score | Gradient |
|----------------------------------|---------------------|
| Unsatisfactory | 60 = Unsatisfactory |
| Marginal | 60 - 69 Points |
| Good | 70 – 79 Points |
| Excellent | 80 - 89 Points |
| Outstanding | 90 – 100 Points |

Gradient Description

- Unsatisfactory Significantly below the standard of performance; deficiencies are serious, and may affect overall results, immediate senior management attention, and prompt corrective action is required.

- Marginal Below the standard of performance; deficiencies are such that management attention and corrective action are required.

- Good Meets the standard of performance; assigned tasks are carried out in an acceptable manner – timely, efficiently, and economically. Deficiencies do not substantively affect performance.

- Excellent Exceeds the standard of performance; although there may be room for improvement in some elements, better performance in all other elements offset this.

- Outstanding Significantly exceeds the standard of performance; achieves noteworthy results; accomplishes very difficult tasks in a timely manner.

Performance Narrative:

Again in this FY 2005 performance year, changes were the common theme. Changes included going from a “gauge model” to an appraisal based on the DOE Headquarters directed Balanced Scorecard (BSC) Model. Other changes included traversing from Contract DE-AC03-76SF00098 or “Contract 98” to Contract DE-AC02-05CH11231 or “Contract 31”. Still further changes were reflected in the recruitment and appointment of new management to lead the property unit and the recommended, adopted and ongoing “overhaul” that is being implemented in Property. Nonetheless, Property Stewardship of Government Property Accountability continues apace. Corrective actions from previous year Government Accountability Office were successfully completed, as was the statistical annual inventory of Laboratory property.

Previous year determinations of staffing level deficiencies are being addressed with augmentation of staff to assist in the aforementioned continuing change to improve the property system that has marked the last fiscal year and this fiscal year.

Contained within the DOE BSC Model are four major categories of assessment:

1. Customer Perspective
2. Internal Business Perspective
3. Learning and Growth Perspective
4. Financial Perspective

In the overall categories the latter two perspectives, Learning and Growth and Financial fully met expectations for outstanding performance. The former two had some activities or practices that fell short of the being able to assign the full point value of the Balanced Scorecard. The Laboratory scored 96.4% (98% target) in the Customer Perspective Category: the percentage of items confirmed by the accountable individual or organization as properly assigned did not meet the DOE National Target. Also, missing the target were portions of the Internal Business Perspective, in which the amount of time allowed of 72 hours to record the receipt of property acquired via purchase card, as well as, the ability to track subcontractor controlled property was only 45% successful (target 98%). Finally, an additional observation that is not a measure of the BSC, but nevertheless is noted for future corrective action, is that the reporting practices of excess property have not been in accord with requirements.

| | |
|---|-------------------------|
| Performance Rating (Adjectival): Excellent | (Percent): 88.0% |
|---|-------------------------|

Report Methodology and Scoring Tables

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Report Methodology

Contract DE-AC03-76SF00098, Appendix F - Objective Standards of Performance

This document provides the Contracting Officer's Fiscal Year 2005 evaluation and validation of the Contractor's self-assessment of performance in its management and operation of LBNL for DOE under the contract. In this contract, UC and DOE have agreed to use a performance-based management system for Laboratory oversight. The parties agreed to use clear and measurable, objective performance measures as standards against which the Contractor's overall performance in Laboratory Leadership, Science and Technology, and Operations and Administration under the contract will be assessed and evaluated. DOE and UC also agreed that UC would conduct an ongoing self-assessment process, including self-assessments done by the Laboratory, as the principal means by which the Contractor would evaluate compliance with the performance objectives contained in Appendix F.

DOE BSO conducts validations of the Contractor's self-assessment and evaluates the Contractor's performance. The validation effort is conducted by teams that are responsible for the various functional areas represented in Appendix F. These teams, with guidance from DOE BSO management, are responsible for 1) developing an adequate, independent basis for assessing the quality, credibility, and accuracy of the Contractor's self-assessment; and 2) establishing a basis for DOE's evaluation of the Contractor's performance.

This report fulfills the requirements of the contract (Appendix F), and specifically supports and meets the contract requirements of Clauses 2.6 and 5.3 to:

- Provide a summary of the results from the conduct of the DOE BSO validation program and evaluation of performance of work;
- Provide a written assessment of the Contractor's performance under the contract based upon the DOE BSO appraisal program, and the Contracting Officer's evaluation of the Contractor's self-assessment; and
- Provide the basis for determination of the Contractor's Program Performance fee.

Contract DE-AC02-05CH11231, Appendix B – Performance Evaluation Measurement Plan

This document provides the Contracting Officer's Fiscal Year 2005 evaluation of the Contractor's performance in its management and operation of LBNL for DOE under the contract. In this contract, UC and DOE have agreed to use a comprehensive performance-based management system for Laboratory management. The parties agreed to use objective performance measures as standards against which the Contractor's overall performance in the science and technical mission obligations under the contract will be assessed and evaluated. DOE and UC also agreed that UC would conduct an ongoing self-assessment process, including self-assessments done by the Laboratory, as the principal means by which the Contractor would evaluate compliance with the contract statement of work and the performance objectives contained in Appendix B.

DOE BSO conducts validations of the Contractor's self-assessment and evaluates the Contractor's performance. The validation effort is conducted by teams that are responsible for the various functional areas represented in Appendix B. These teams, with guidance from DOE BSO management, are responsible for 1) developing an adequate, independent basis for assessing the quality, credibility, and accuracy of the Contractor's self-assessment; and 2) using information gathered in addition to the self assessment through operational awareness, peer reviews, outside agency reviews and for cause reviews conducted by DOE, for establishing a basis for DOE's evaluation of the Contractor's performance.

This report fulfills the requirements of the contract (Appendix B), and specifically supports and meets the contract requirements of Clause H.14 to provide an annual written assessment of the Laboratory's performance and also provides a basis for the determination of fee earned required by Clause I.82.

1. Components of Laboratory Evaluation Process

For Science and Technology (S&T) mission execution, the Laboratory uses external peer reviews to provide internal advice to its management on the overall quality and direction of scientific and technical work, the effectiveness of research program planning and management, and other aspects affecting the ability of the Laboratory to effectively support DOE's missions and national research needs. An S&T Self-Assessment report is produced and made available to DOE each year summarizing the results of these peer reviews, and including a programmatic cross-walk.

For mission support functions and systems, a Laboratory and Contractor management team documents and evaluates performance for Laboratory Leadership, Technical Services Operations (Facilities and Infrastructure Management, Environment, Safety and Health Protection) and Business Services Operations (Financial Management, Human Resources, Procurement, and Property Management) on the basis of established performance expectations, objectives, measures, and gradients. Table 1 defines the overall adjectival ratings for the functional areas and shows the conversion of overall functional area scores and adjectival ratings.

The Contractor provides a self-assessment rating for each of these Leadership and Operations (L&O) areas. A Performance Self-Assessment report and related briefing is produced and provided to DOE at the end of the fiscal year. To help ensure accuracy and credibility, drafts of the self-assessment report are reviewed and validated by functional Independent Evaluation Audit.

DOE Evaluation and Appraisal Process

The DOE Berkeley Site Office is responsible for annually developing and producing an overall Laboratory performance appraisal for work done under the contract. The goal is to produce this annual report in the first quarter-year after the end of a fiscal year, i.e., October through December each year. This is done in two parts: the S&T part of the evaluation is based on the input of DOE-HQ program sponsors of LBNL research, and the L&O part of the evaluation is generated locally utilizing the validated Laboratory and Contractor self-assessment and rating as one source of input.

Late in the fiscal year, the BSO solicits S&T evaluation input and program performance ratings from major DOE sponsors of Laboratory research work based on the established assessment criteria and adjectival gradient. These include the DOE Office of Science (SC) with six sub-programs, Energy Efficiency and Renewable Energy (EERE), Fossil Energy (FE), Civilian Radioactive Waste Management (CRWM)/Yucca Mountain Project (YMP), and potentially other program offices. The narrative input can be edited and supplemented by cognizant BSO program representatives as needed and appropriate. The program ratings are set by the sponsors, and the programs are weighted by their relative annual funding to develop the overall S&T mission performance score. Any S&T performance appraisal input not based on a 100-point scale will be converted to a 100-point scale for the purposes of aggregating the assessments of the various programs and deriving an overall S&T score and adjectival rating.

At the end of the fiscal year, BSO functional managers assigned to each L&O area generate a performance evaluation and functional rating based on the details of the associated performance expectations, objectives, measures, and gradients, including Balance Scorecard elements. The Laboratory/Contractor self-assessment provides an important, but not the only, source of input for these functional appraisals. BSO functional managers may also use the results of monitoring and awareness activities conducted throughout the year pertinent to the systems being assessed.

The results of the S&T and L&O evaluations are aggregated, and an overall Laboratory performance appraisal report is drafted. The BSO develops a corresponding presentation highlighting the annual outcomes and trends from prior years. This is presented by the BSO Site Manager or designee to a DOE Performance Review Board (PRB) chaired by HQ-SC. The PRB provides comments, input, suggested changes or direction, which are addressed and incorporated. The draft appraisal report is provided to the Contractor for a factual accuracy review; any comments are addressed and a final report is generated and distributed after review and approval by the Site Manager and the DOE Office of Science. Based on the final appraisal results, the BSO Contracting Officer determines the annual performance-based fee earned under the contract, and solicits HQ-SC approval for its release to the Contractor.

Table 1 – Adjectival Rating Gradient and Functional Score Conversion

| Adjectival Rating | Performance Definition | Functional Score |
|-------------------|---|------------------|
| Outstanding | Significantly exceeds the standard of performance; achieves noteworthy results; accomplishes very difficult tasks in a timely manner. | 90.0 – 100% |
| Excellent | Exceeds the standards of performance; although there may be room for improvement in some elements, this is offset by better performance in all other elements. | 80.0 – 89.9% |
| Satisfactory | Meets the standard of performance; assigned tasks are carried out in an acceptable manner - timely, efficiently, and economically. Deficiencies do not substantively affect performance. | 70.0 – 79.9% |
| Marginal | Below the standards of performance; deficiencies are such that management attention and corrective action are required. | 60.0 – 69.9% |
| Unsatisfactory | Significantly below the standard of performance; deficiencies are serious, and may affect overall results, immediate senior management attention, and prompt corrective action is required. | <60.0% |

2. Self-Assessment Period

Designed to capture performance for Fiscal Year 2005, the self-assessment period for the Laboratory is October 1, 2004 through September 30, 2005, unless specified in the Performance Objective. In accordance with contract DE-AC02-05CH11231 the University is required to provide a self-assessment report within 45 days of the end of the rating period. Significant performance between any cut-off date established for timely self-assessment submittal and the end of the Fiscal Year is to be assessed by the Laboratory and provided as a supplement to the self-assessment.

**Table A – Science and Technology Scores
Lawrence Berkeley National Laboratory**

| SCIENCE AND TECHNOLOGY | | ADJECTIVAL RATING | FUNDING (\$M) | WEIGHT | NUMERIC SCORE | WEIGHTED SCORE |
|-------------------------------|---|--------------------------|----------------------|---------------|----------------------|-----------------------|
| BASIC ENERGY SCIENCES | | Outstanding | \$99.74 | 28.4% | 92.8 | .26 |
| Criteria 1 | Quality of Science | Outstanding | | | 95.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Outstanding | | | 94.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | Outstanding | | | 96.0% | |
| Criteria 4 | Programmatic Performance and Planning | Excellent | | | 86.0% | |
| HIGH ENERGY PHYSICS | | Outstanding | \$39.04 | 11.1% | 90.7 | .10 |
| Criteria 1 | Quality of Science | Outstanding | | | 92.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Outstanding | | | 95.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | Outstanding | | | 90.0% | |
| Criteria 4 | Programmatic Performance and Planning | Excellent | | | 85.0% | |

**Table A – Science and Technology Scores
Lawrence Berkeley National Laboratory**

| SCIENCE AND TECHNOLOGY | | ADJECTIVAL RATING | FUNDING (\$M) | WEIGHT | NUMERIC SCORE | WEIGHTED SCORE |
|-------------------------------|---|--------------------------|----------------------|---------------|----------------------|-----------------------|
| NUCLEAR PHYSICS | | Outstanding | \$18.80 | 5.3% | 93.5 | .05 |
| Criteria 1 | Quality of Science | Outstanding | | | 95.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Outstanding | | | 95.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | Outstanding | | | 92.0% | |
| Criteria 4 | Programmatic Performance and Planning | Outstanding | | | 92.0% | |
| COMPUTING SCIENCES | | Outstanding | \$71.55 | 20.4% | 95.0 | .19 |
| Criteria 1 | Quality of Science | Outstanding | | | 92.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Outstanding | | | 96.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | Outstanding | | | 96.0% | |
| Criteria 4 | Programmatic Performance and Planning | Outstanding | | | 96.0% | |

**Table A – Science and Technology Scores
Lawrence Berkeley National Laboratory**

| SCIENCE AND TECHNOLOGY | | ADJECTIVAL RATING | FUNDING (\$M) | WEIGHT | NUMERIC SCORE | WEIGHTED SCORE |
|--|---|--------------------------|----------------------|---------------|----------------------|-----------------------|
| FUSION ENERGY SCIENCES | | Outstanding | \$6.05 | 1.7% | 92.0 | .02 |
| Criteria 1 | Quality of Science | Outstanding | | | 95.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Excellent | | | 86.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | N/A | | | | |
| Criteria 4 | Programmatic Performance and Planning | Outstanding | | | 95.0% | |
| BIOLOGICAL AND ENVIRONMENTAL RESEARCH | | Outstanding | \$71.87 | 20.4% | 94.3 | .19 |
| Criteria 1 | Quality of Science | Outstanding | | | 94.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Outstanding | | | 94.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | Outstanding | | | 95.0% | |
| Criteria 4 | Programmatic Performance and Planning | Outstanding | | | 94.0% | |

**Table A – Science and Technology Scores
Lawrence Berkeley National Laboratory**

| SCIENCE AND TECHNOLOGY | | ADJECTIVAL RATING | FUNDING (\$M) | WEIGHT | NUMERIC SCORE | WEIGHTED SCORE |
|---|---|--------------------------|----------------------|---------------|----------------------|-----------------------|
| ENERGY EFFICIENCY & RENEWABLE ENERGY | | Excellent | \$26.51 | 7.5% | 84.6 | .06 |
| Criteria 1 | Quality of Science | Excellent | | | 85.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Excellent | | | 89.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | N/A | | | | |
| Criteria 4 | Programmatic Performance and Planning | Good | | | 79.9% | |
| CIVILIAN RADIOACTIVE WASTE MANAGEMENT | | Outstanding | \$7.50 | 2.1% | 90.0 | .02 |
| Criteria 1 | Quality of Science | Excellent | | | 85.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | N/A | | | | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | N/A | | | | |
| Criteria 4 | Programmatic Performance and Planning | Outstanding | | | 95.0% | |

**Table A – Science and Technology Scores
Lawrence Berkeley National Laboratory**

| SCIENCE AND TECHNOLOGY | | ADJECTIVAL RATING | FUNDING (\$M) | WEIGHT | NUMERIC SCORE | WEIGHTED SCORE |
|--|---|--------------------------|----------------------|---------------|----------------------|-------------------------|
| FOSSIL ENERGY | | Outstanding | \$5.89 | 1.7% | 90.0 | .02 |
| Criteria 1 | Quality of Science | Outstanding | | | 90.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Outstanding | | | 90.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | N/A | | | N/A | |
| Criteria 4 | Programmatic Performance and Planning | Outstanding | | | 80.0% | |
| OFFICE OF ELECTRICAL DELIVERY and ENERGY RELIABILITY (OE) | | Outstanding | \$4.50 | 1.3% | 90.0 | .01 |
| Criteria 1 | Quality of Science | Outstanding | | | 90.0% | |
| Criteria 2 | Relevance to National Needs and Agency Missions | Outstanding | | | 90.0% | |
| Criteria 3 | Performance in the Technical Development and Operation of Major Research Facilities | N/A | | | | |
| Criteria 4 | Programmatic Performance and Planning | Outstanding | | | 90.0% | |
| ADJECTIVAL RATING | | | | | | Outstanding |
| PERCENTAGE SCORE | | | | | | 91.8³ |
| APPENDIX F S&T POINT SCORE | | | | | | 642.6 |

³ This figure has been adjusted from 92.4 to represent the decrement for a \$2.2M area of science funded by NNSA where a case of research misconduct was self-identified by the lab.

Table B – Laboratory Leadership

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | Column 1 | Column 2 | Column 3 |
|--|-----------------|--------------|--------------|
| | Possible Points | SCORE | PERCENT |
| LABORATORY LEADERSHIP | 60.0 | 55.20 | 92.0% |
| PERFORMANCE OBJECTIVE 1.0: Laboratory Leadership (Weight =100%) | | | |
| | 60.0 | 55.20 | 92.0% |

Table C – Operations and Administration Scores

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | Column1 | Column2 | Column3 |
|--|-----------------|----------------|----------------|
| | Possible Points | SCORE | PERCENT |
| ENVIRONMENT, SAFETY & HEALTH | 60 | 48.17 | 80.3% |
| Performance Objective 1.0 | | | |
| 1.1 Best Practices & Certified/Independently Validated ES&H Management Systems | 24 | 19.30 | 80.4% |
| | | | |
| Performance Measure 2.0 | | | |
| 2.1 ISM System | 36 | 28.87 | 80.2% |

Table C – Operations and Administration Scores

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | Column1 | Column2 | Column3 |
|---|------------------------|----------------|----------------|
| | Possible Points | SCORE | PERCENT |
| PROJECT/FACILITIES & CONSTRUCTION MANAGEMENT | 30.0 | 28.5 | 95.0% |
| Performance Measure 1.0: | | | |
| Effective Project Facilities & Construction Management | 30.0 | 28.50 | 95.0% |

Table C – Operations and Administration Scores

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | Column1 | Column2 | Column3 |
|---|-----------------------|----------------|----------------|
| | Possible Score | SCORE | PERCENT |
| FINANCIAL MANAGEMENT CONTRACT "98" | 30.00 | 29.40 | 98.0% |
| Performance Objective: 1.0: Effective Financial Management (Weight = 100%) | | | |
| Performance Measure: | 30.00 | 29.40 | 0.98 |
| 1.1.a Method of Measurement (Weight = 100%) | 30.00 | 29.40 | 98.0% |
| FINANCIAL MANAGEMENT CONTRACT "31" | 45.00 | 44.10 | 98.0% |
| Performance Objective: 1.0: Effective Financial Management (Weight = 100%) | | | |
| Performance Measure: | 45.00 | 44.10 | 0.98 |
| 1.1.a Method of Measurement (Weight = 100%) | 45.00 | 44.10 | 98.0% |

Table C – Operations and Administration Scores

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | | | Column1 | Column2 | Column3 |
|---|---------------------------------------|------------------------|------------------------|-------------|--------------|
| | | | Possible Points | SCORE | PERCENT |
| HUMAN RESOURCES | | | 30.0 | 26.4 | 88.0% |
| Performance Objective: 1.0: | Effectiveness of HR Operations | (Weight = 100%) | 30.0 | 26.4 | 88.0% |
| Certified Human Resource Management System 1.1 | | | (Weight = 100%) | 30.0 | 26.4 |

Table C – Operations and Administration Scores

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | | | Column1 | Column2 | Column3 |
|---|--|-----------------|-----------------|---------|---------|
| | | | Possible Points | SCORE | PERCENT |
| INFORMATION TECHNOLOGY MANAGEMENT / CYBERSECURITY CONTRACT "98" | | | 30.0 | 27.90 | 93.0% |
| Performance Objective: 1.0: | Effectiveness of Info. Tech. Mgmt. / Cybersecurity | (Weight = 100%) | 30.0 | 27.90 | 93.0% |
| INFORMATION TECHNOLOGY MANAGEMENT / CYBERSECURITY CONTRACT "31" | | | 15.0 | 13.95 | 93.0% |
| Performance Objective: 1.0: | Effectiveness of Info. Tech. Mgmt. / Cybersecurity | (Weight = 100%) | 15.0 | 13.95 | 93.0% |

Table C – Operations and Administration Scores

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | Column1 | Column2 | Column3 |
|--|-----------------|--------------|--------------|
| | Possible Points | SCORE | PERCENT |
| PROCUREMENT | 30.0 | 22.5 | 75.0% |
| PERFORMANCE OBJECTIVE 1.0: Procurement Excellence (Weight = 100%) | 30.0 | 22.50 | 75.0% |

Table C – Operations and Administration Scores

| PERFORMANCE OBJECTIVES, CRITERIA AND MEASURES | Column1 | Column2 | Column3 |
|--|------------------------|----------------|----------------|
| | Possible Points | SCORE | PERCENT |
| PROPERTY MANAGEMENT | 30.0 | 26.40 | 88.0% |
| PERFORMANCE OBJECTIVE 1.0: Personal Property Excellence (Weight = 100%) | 30.0 | 26.40 | 88.0% |
| Performance Measure 1.1 | | | |
| Measuring System and Service Levels (Weight 100%) | 30.0 | 26.40 | 88.0% |

**Table D – Total Performance Appraisal Score Summary
Lawrence Berkeley National Laboratory**

| FUNCTIONAL AREA | POSSIBLE | SCORE | PERCENT | ADJECTIVE |
|---|-----------------|--------------|----------------|--------------------|
| LABORATORY LEADERSHIP | 60 | 55.2 | 92.0% | OUTSTANDING |
| ENVIRONMENT, SAFETY & HEALTH MANAGEMENT | 60 | 48.2 | 80.3% | EXCELLENT |
| PROJECT/FACILITIES AND CONSTRUCTION MANAGEMENT | 30 | 28.5 | 95.0% | OUTSTANDING |
| FINANCIAL MANAGEMENT | 30 | 29.4 | 98.0% | OUTSTANDING |
| HUMAN RESOURCES | 30 | 26.4 | 88.0% | EXCELLENT |
| INFORMATION TECHNOLOGY MGMT / CYBERSECURITY | 30 | 27.9 | 93.0% | OUTSTANDING |
| PROCUREMENT | 30 | 22.5 | 75.0% | GOOD |
| PROPERTY MANAGEMENT | 30 | 26.4 | 88.0% | EXCELLENT |
| SCIENCE & TECHNOLOGY SUBTOTAL | 700 | 642.6 | 91.8% | OUTSTANDING |
| LABORATORY LEADERSHIP SUBTOTAL | 60 | 55.2 | 92.0% | OUTSTANDING |
| OPERATIONS & ADMINISTRATION SUBTOTAL | 240 | 209.3 | 87.2% | EXCELLENT |
| LBNL TOTAL CONTRACT DE-AC03-76SF00098 | 1,000 | 907.1 | 90.7% | OUTSTANDING |

**Table D – Total Performance Appraisal Score Summary
Lawrence Berkeley National Laboratory**

| FUNCTIONAL AREA | POSSIBLE | SCORE | PERCENT | ADJECTIVE |
|---|-----------------|--------------|----------------|--------------------|
| LABORATORY LEADERSHIP | 60 | 55.2 | 92.0% | OUTSTANDING |
| ENVIRONMENT, SAFETY & HEALTH MANAGEMENT | 60 | 48.2 | 80.3% | EXCELLENT |
| PROJECT/FACILITIES AND CONSTRUCTION MANAGEMENT | 30 | 28.5 | 95.0% | OUTSTANDING |
| FINANCIAL MANAGEMENT | 45 | 44.1 | 98.0% | OUTSTANDING |
| HUMAN RESOURCES | 30 | 26.4 | 88.0% | EXCELLENT |
| INFORMATION TECHNOLOGY MGMT / CYBERSECURITY | 15 | 14.0 | 93.0% | OUTSTANDING |
| PROCUREMENT | 30 | 22.5 | 75.0% | GOOD |
| PROPERTY MANAGEMENT | 30 | 26.4 | 88.0% | EXCELLENT |
| SCIENCE & TECHNOLOGY SUBTOTAL | 700 | 642.6 | 91.8% | OUTSTANDING |
| LABORATORY LEADERSHIP SUBTOTAL | 60 | 55.2 | 92.0% | OUTSTANDING |
| OPERATIONS & ADMINISTRATION SUBTOTAL | 240 | 210.0 | 87.5% | EXCELLENT |
| LBNL TOTAL CONTRACT DE-AC02-05CH11231 | 1,000 | 907.8 | 90.8% | OUTSTANDING |