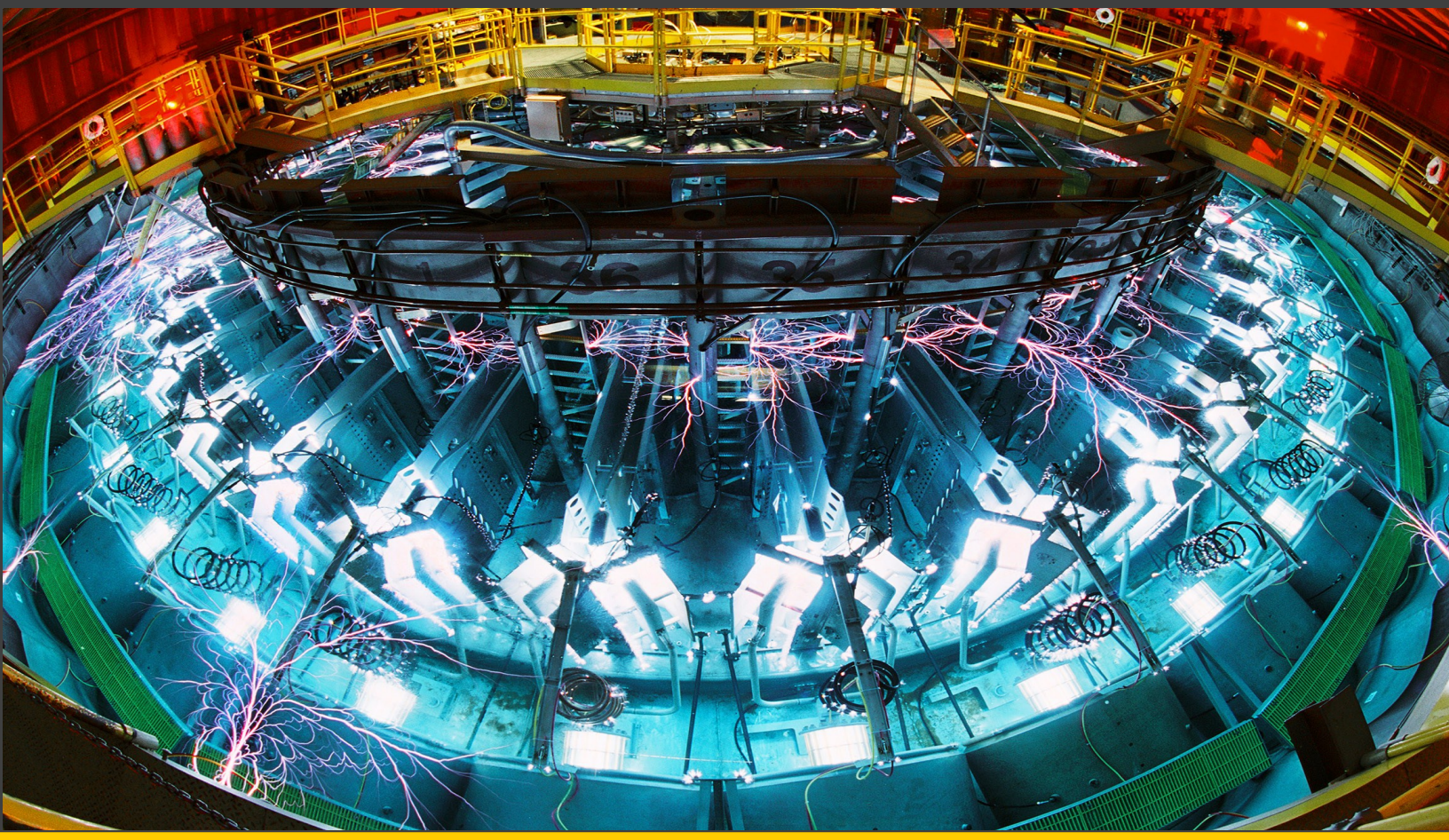
A Report by a Panel of the

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

for the U.S. Congress and the Department Of Energy

DEPARTMENT OF ENERGY



POSITIONING DOE'S LABS FOR THE FUTURE:

A REVIEW OF DOE'S MANAGEMENT AND OVERSIGHT OF THE NATIONAL LABORATORIES

- APPENDICES TO THE REPORT -

January 2013

National Academy of Public Administration ®

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January 2013

U.S. Department of Energy

Positioning DOE's Labs for the Future:
A Review of DOE's Management and Oversight of the National Laboratories

APPENDICES TO THE REPORT

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ACRONYMS

Academy	National Academy of Public Administration
AF	Air Force
AL	Acquisition Letter
ALMA	Altacama Large Millimeter Array
ANSI	American National Standards Institute
ASD (R&E)	Assistant Secretary of Defense for Research and Engineering
AST	Division of Astronomical Sciences
AUI	Associated Universities, Inc.
BSR	business systems review
CAASD	Center for Advanced Aviation System Development
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CIT	California Institute of Technology
CO	contracting officer
COO	Chief Operating Officer
CRADA	Cooperative Research and Development Agreement
DCAA	Defense Contract Audit Agency
DEAR	Department of Energy Acquisition Regulation
DoD	Department of Defense
DOE	Department of Energy
EERE	Office of Energy Efficiency and Renewable Energy
EM	Office of Environmental Management
EPA	Environmental Protection Agency
ES&H	environmental, safety, and health
FAA	Federal Aviation Administration
FAR	Federal Acquisition Regulation
FDO	fee determining official
FE	Office of Fossil Energy
FEB	FFRDC Executive Board
FFRDC	Federally Funded Research and Development Center
FNLCR	Frederick National Laboratory for Cancer Research
FOA	funding opportunity announcement
FTE	full-time equivalents
FY	fiscal year
HHS	Department of Health and Human Services
HQ	headquarters
HSPD-12	Homeland Security Presidential Directive 12
IA	Internal Audit
IG	Inspector General
IMS	Integrated Management System
IN	Office of Indian Energy Policy and Programs
INL	Idaho National Laboratory
IPT	integrated project team
IPv6	Internet Protocol version 6

ISSM	Integrated Safeguards and Security Management
JAC	Joint Advisory Committee
JPL	Jet Propulsion Laboratory
KDP	Key Decision Point
LANL	Los Alamos National Laboratory
LFO	Large Facilities Office
LL	Lincoln Laboratory
LLNL	Lawrence Livermore National Laboratory
LRP	long range plan
M&O	management and operating
MIT	Massachusetts Institute of Technology
MOIEO	Mission-Oriented Investigation and Experimentation Outputs
NARP	National Aviation Research Plan
NASA	National Aeronautics and Space Administration
NCI	National Cancer Institute
NDRI	National Defense Research Institute
NE	Office of Nuclear Energy
NIAID	National Institute of Allergy and Infectious Diseases
NLDC	National Laboratory Directors' Council
NNSA	National Nuclear Security Administration
NRAO	National Radio Astronomy Observatory
NREL	National Renewable Energy Laboratory
NSF	National Science Foundation
OIG	Office of the Inspector General
OMB	Office of Management and Budget
OMT	Outcome Management Team
ORPS	Occurrence Reporting and Processing System
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
OSMA	Office of Safety and Mission Assurance
OTS	Operations and Technical Support
PBWP	Product Based Work Plan
PCD	Program Control Document
PEB	Performance Evaluation Board
PEMP	Performance Evaluation and Measurement Plan
PEP	Performance Evaluation Plan
PID	Performance Incentive Document
POP	Program Operating Plan
QPRB	Quarterly Product Review Board
R&D	research and development
RFP	request for proposal
SAIC	Science Applications International Corporation
SAIC - F	Science Applications International Corporation – Frederick
SC	Office of Science
SMU	Strategic Management Unit
SNL	Sandia National Laboratory

SO	site office
SOM	Site Office Manager
SRNL	Savannah River National Laboratory
STARS	Standard Accounting and Reporting System
STE	science and technical employees
STRIPES	Strategic Integrated Procurement Enterprise System
TDAC	Technology Development Advisory Committee
USD (AT&L)	Undersecretary of Defense for Acquisition, Technology, & Logistics
WFO	work for others

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INTRODUCTION

In December 2011, the Energy and Water Development Appropriations Subcommittees asked the National Academy of Public Administration (Academy) to conduct an independent review of the Department of Energy (DOE's) management and oversight of the national laboratories. As part of the review, the Academy also was asked to benchmark several non-DOE Federally Funded Research and Development Centers (FFRDCs) and compare the management and oversight of these entities with the DOE laboratories.

In May 2012, the Academy convened an expert Panel experienced in DOE issues to guide the project's research and to make recommendations to improve the Department's oversight and evaluation processes. Staff experienced in the subjects to be studied were recruited to support the Panel. For contracting expertise, the Academy subcontracted with the Jefferson Consulting Group.

During the course of this study, project staff conducted interviews and performed research at DOE headquarters in Washington D.C. and at 9 national laboratories and their DOE site offices. In addition, project staff conducted interviews and research at 6 non-DOE FFRDCs. Due to the amount of data collected and the depth of analyses, detailed information on DOE's lab evaluation processes and the benchmarked FFRDCs are included in this compilation of appendices, which are referenced throughout the report.

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APPENDIX A: NATIONAL LABORATORY DIRECTORS' COUNCIL (NLDC) ISSUES AND CORRESPONDING DOE ACTIONS

NLDC ISSUE		DOE ACTION
1. Unneeded Approvals **Problem:** Business processes that require DOE approval of management and operating (M&O) contract activities should be reserved for extremely high-value, high-risk transactions. A proliferation of approvals have arisen, often in response to minor and isolated problems, at the site office, service center, program, or headquarters support level; approvals inappropriately distribute risk-acceptance responsibilities and lead to costly delays and risk-aversion. DOE must clearly state when site offices or service centers should be involved in serious, high-risk, high-dollar approvals and excluded from routine approvals. Pursue the following actionable items to reduce unneeded approvals:		
1A	DOE approval is required for all cooperative research and development agreement (CRADA) and work for others (WFO) agreements, leading to costs and delays. Delegate all but very high value or unique approvals to the M&O and hold them accountable for maintaining appropriate portfolios. Delegate authority for foreign WFOs and, if needed, provide an entities list with which the M&O should not contract.	***Approving WFO and CRADA Proposals*.** For CRADAs, issued an Acquisition Letter outlining a new streamlined process on 6/25/12. For WFO proposals, NNSA conducted a Lean Six Sigma assessment in collaboration with the laboratories and other programs to streamline the WFO review process. The recommendations, which include the development of templates and checklists, are being implemented.
1B	Some DOE review and approvals related to salary actions are outdated and limit contractors' flexibility to address salary needs as they arise. Allow labs to move funds between salary adjustment categories (except for variable pay) during the fiscal year and delete requirement for DOE approval for key personnel salaries. Some field offices require that they approve the salaries of the M&O contractor's top three executives. This is not justified as salaries over the allowed amount are covered with unallowable, i.e., contractor funds. Eliminate reporting of salaries above particular thresholds.	***Salary Approval/Reporting Requirements*.** (1) Contractors will have the flexibility to make minor shifts of funds (10%) across salary categories without DOE approval. (2) Programs will approve each laboratory director's salary annually. All other key personnel will be transitioned to the contractor's Controlled Insurance Program. DOE will approve the salaries of key personnel upon initial contract award and when key personnel are replaced. (3) Contractor reporting of salaries above particular thresholds will be eliminated. Memorandum issued to Under Secretaries regarding these policy changes on 10/24/11.

	NLDC ISSUE	DOE ACTION
1C	DOE approval for higher value subcontracts and procurements results in long delays and risk aversion. Substantially raise the thresholds for review for all M&Os and limit DOE review to either the solicitation or award if changes are minimal. Give contractors the authority to make Davis-Bacon construction determinations. Delegate authority to the contractor to make all Buy American Non-availability determinations. Raise the major items of equipment threshold from $2 million to $10 million. Permit M&Os to accept vendor terms and conditions on procurements up to $100,000 at laboratory discretion. Allow contracting officers to describe classes of procurements and projects that must meet certain requirements (such as labor standards), rather than individually reviewing them.	***Subcontract Approvals.*** Agreement reached on increasing the threshold for subcontract approvals based on risk. A guide chapter outlining the new policy was issued on 10/19/11. ***Davis-Bacon Authority.*** Contracting officers were provided with guidance for working with contractors to approve "classes" of Davis-Bacon determinations rather than issuing individual determinations. Acquisition Letter on new policy was issued on 10/6/11. ***Buy American Authority.*** Increased the delegated level for approving Buy American determinations from $100,000 to $500,000. Department of Energy Acquisition Regulation (DEAR) deviation issued on 8/29/11. ***Major Items of Equipment.*** Agreed that raising the major item of equipment threshold from $2 million to $10 million need not be pursued at this time. ***Vendor Terms and Conditions.*** Agreed to permit contractors to accept certain terms and conditions for procurements up to $100,000 at laboratory discretion. Policy flash was issued on 9/23/11.
1D	International collaboration and conference attendance is a necessary part of all areas of scientific research. Approval for foreign travel is extremely time consuming and substantially increases the costs to DOE by delaying travel purchases. Re-evaluate the DOE 0 55l.1C Official Foreign Travel for possible elimination or revision. Identify the basic requirements and make the contractor accountable for meeting these and clearly define those that do not require DOE approvals.	***Foreign Travel Order.*** Revised order issued on April 2, 2012. Delegates additional authority to the laboratories and provides greater consistency.

NLDC ISSUE		DOE ACTION
2. Excessive Oversight **Problem:** DOE's structure encourages a "piling on" of audits and assessments without clear risk-prioritization, coordination, or value. Audit findings must always follow audits, and these take on the force of policy, resulting in variable, audit-driven policy responses and ever higher costs. The laboratories must staff up to deal with these audits and assessments, moving more and more dollars away from science. Recommend reducing the scope of audit activities and limit them to real "for cause" actions. Rely on independent audit functions at the laboratories. Substantially improve management of "corrective action" responses.		
2A	The Office of the Inspector General (OIG) has migrated from looking at serious areas of risks to poking at a never-ending stream of seemingly random "efficiency opportunities," which despite being un-validated and often rejected by management and subject matter experts throughout the complex, are listed as findings that require actions. A cycle of "policy by audit" follows as headquarters departments attempt to be responsive to the OIG. Break this cycle. Engage in serious conversation with the Inspector General (IG) about the office's priorities and radically reduce the focus on efficiency opportunities within the laboratories, just as IG's in other agencies don't audit their contractors to find "efficiencies."	***DOE and the NLDC agreed not to pursue this item.***
3. Unnecessary Reporting **Problem:** The laboratories are required to submit a variety of reports to DOE. Many of these reports are duplicative or provide information that does not contribute to better management or oversight of the M&O. On the contrary, much of this reporting is time consuming and ultimately is not used in any meaningful way towards the missions of the labs. Below are specific reporting requirements that do not add value in managing the laboratories.		
3A	It is anticipated that criteria proposed in the Review and Comment System draft DOE 0 232.1 would, at minimum, triple the number of reportable occurrences at many labs with little promotion of organizational learning and possible	***Occurrence Reporting and Processing of Operations Information Order.*** Revised order issued on 8/30/11.

NLDC ISSUE		DOE ACTION
	negative impacts on open reporting cultures. Given the type of events required to be reported, based in the new draft order, it appears this may be an attempt to use the Occurrence Reporting and Processing System (ORPS) process to collect metric-type data on issues that are not necessarily event driven. This, however, comes at increased indirect costs to manage ORPS processes by organizational occurrence owners, and the increased support for event critiques/causal analyses. Revise 0232.1 based on this input.	
4. Striving Towards Best Practices **Problem:** In many areas of DOE, best practices or even conventional operating practices used in industry and academia are not followed. While best practices may not be suitable for some unique processes within DOE, many of the practices in place do not deliver more effectively with fewer problems and unforeseen complications. Below are specific instances where DOE can strive toward better practices.		
4A	Consistent with the DOE Office of Finance and Accounting recommendation, increasing the dollar threshold for the capitalization of assets from $50,000 to $500,000 would significantly reduce the cost and effort currently required to cap items at the lower threshold. Beyond this threshold though, distinguishing between operating and capital funds is in and of itself a useless exercise. This distinction can easily be made for items treated as projects under DOE Order 413.3-1b, so it is for the items that do not fall under the order (< $5 million) where it could make a difference. National laboratories are not corporations that own assets; the assets belong to the government, so there is no value in distinguishing between capital and operating funds. Depreciation and other tax consequences have no relevance to our situation. If one looks over the entire DOE complex,	***Threshold for Capitalizing Property, Plant, and Equipment.*** Raised threshold from $50,000 to $500,000. Memorandum issued by the Chief Financial Officer (CFO) effective 10/1/11.

NLDC ISSUE		DOE ACTION
	including laboratories, field offices, and headquarters, there are 100's of accountants and supporting staff whose job is to deal with "correctly" accounting for these items. Therefore, significant savings would result from eliminating the "color of money" complication. The argument here is stronger than a "no added value" one; besides paying people to track something that has no relevance, managers waste time worrying about these arbitrary categorizations of money.	
4B	Extrapolation incentivizes contractors to have excessive controls to minimize impact to unallowable cost. A contractor who maintains a system with a reasonable error rate, consistent with commercial practices, may be required to write off costs from private funds because a more expensive zero error system was not maintained. This creates a situation where cost to achieve perfection is allowable, while a more moderate and balanced cost of operation focused on efficiency frequently results in an unallowable cost penalty to the contractor. Therefore, we suggest the Department develop policy guidance for contracting officers and contractor internal audit organizations that recognizes when it may be in the best interest of the government to forego questioning minor errors and the extrapolation of questioned costs when the contractor is operating financial systems within reasonable error rates.	***Guidance for Contracting Officers on Unallowable Cost Determinations*.** Acquisition Letter providing updated guidance issued on 10/24/11 emphasizing the need for using reasonableness as a criteria in determining whether a cost is unallowable.
4C	DOE's property management requirements are extremely expensive to implement and are not cost-benefit positive for the agency. DOE should revisit entirely the concept of treating all M&O property as government property in the same way the agency does, and should instead look towards alternate models that permit laboratories to operate property management systems that are in line with peer private	***Personal Property Management Order*.** Revised order issued on April 9, 2012. Provides greater discretion in determining how personal property is managed.

NLDC ISSUE		DOE ACTION
	institutions and universities. In particular, DOE should delegate risk-based judgments about what items should be tracked to M&Os, report lost and missing items at fair market or depreciated value, and allow laboratories to stop inventorying items after they reach zero value. Use information security and cyber security requirements to manage these risks instead of trying to mitigate them with property requirements. Numerous federal approvals at several levels are required for disposal of property. Delegate property disposal approval to the M&O for all but very high-value approvals.	
4D	The funds and budgeting process does not lead to effective program execution. The process by which funding decision are made at headquarters and then executed to the field is lengthy and outdated. The Federally Funded Research and Development Centers (FFRDC) regularly are given the verbal charge to perform work by a DOE office, but the actual financial plan update does not occur for 4-8 weeks. There is an expectation that work is actually being initiated, but, the FFRDCs are forbidden from commencing work without having funding in the financial plan. The financial plan updates should be made at the time that work is authorized. Budget process: accessibility of funds. It takes up to 8 weeks for the research staff to have access to funding once headquarters program managers input into the financial plan. If the American Recovery and Reinvestment Act funds can be turned around much faster; program funds should be able to as well. In addition, recent changes to the Strategic Integrated Procurement Enterprise System that have slowed down the ability to put funding on laboratory contracts and which require an early cutoff date (likely end	***Funds Distribution*****.** This issue is still outstanding and the Academy Panel is making recommendations on how DOE should pursue it.

NLDC ISSUE		DOE ACTION
	of June/beginning of July) will hamper DOE's ability to execute on Funding Opportunity Announcements in the same year they are issued and will reduce the laboratories' ability to bring leverage to the DOE resources through partnership with other organizations, such as the DoD. Funding decisions need to move more quickly.	
4E	The Standard Accounting and Reporting System (STARS) requires that contractor and DOE books balance precisely (to the penny) by award by fund type. Rounding issues are inherent in all systems. Implementing the necessary adjustments to align with the STARS accounting system is costly in terms of time and resources. It costs more to adjust immaterial variances than the actual amount of the variance. It is suggested that the STARS requirement for individual WFO awards be modified to allow for immaterial variances.	***Accounting for Variances on WFO Expenditures*.** Individual field CFOs have been granted the authority to streamline resolution requirements for their contractors regarding the prompt resolution of WFO-level immaterial edit anomalies. Policy memorandum issued to field CFOs on 9/13/11.
5. Over-Regulation **Problem:** DOE has developed regulations in the form of Orders, guidance, or memos that are duplicative of and often go beyond existing national standards. These regulations are often requirements that are imposed with little flexibility and may contradict existing national standards. Below are specific items that highlight this problem.		
5A	The DOE Worker Safety and Health Program establishes the worker safety and health requirements for DOE contractors. The rule, 10 C.F.R. A§ 851, adopted Occupational Safety and Health Administration (OSHA) standards, American Society of Mechanical Engineers standards, American National Standards Institute standards, National Fire Protection Association Codes, and National Electrical Code. The rule goes significantly beyond the OSHA standards and incorporates standards that were not designed to be regulatory in nature. It has not been	***Implementing OSHA Standards*.** Agreed to table this initiative at this time.

NLDC ISSUE		DOE ACTION
	demonstrated that the rule has improved worker safety at DOE facilities since its adoption; however, the cost to implement and maintain the requirements that go beyond the OSHA standards have significantly increased costs to DOE contractors and subcontractors. Therefore, it is recommended that the rule be revised to implement only OSHA standards. This action would align DOE facilities with U.S. industry, academia, and other federal facilities, such as the National Institute of Science and Technology. Use of guidelines as standards, such as those provided by the National Institutes of Health, also should be eliminated.	
5B	DOE Orders 430.18 and 413.38 impose multi-layered rules and regulations. DOE officials interpret and impose these orders inconsistently, which leads to confusion of requirements, program delays, and increased costs, all of which impede mission delivery. One lab estimates that DOE Order 413.38 increases schedule requirements by a minimum of one-third and costs by at least 15%. Additive time for completing capital projects contributes to aging infrastructure, which increases maintenance and energy costs, impedes mission work, and negatively affects the morale of facility occupants. Recommend reviewing and revising both orders to reduce costs of implementation and complexity.	***Real Property Order*.** This order is being revised as part of a pilot to conduct a holistic review of all real property-related orders. Initially, the review will include conducting a risk assessment of the Real Property Order by 11/30/2012.
6. Improving Policy Making **Problem:** DOE's policy making process appears to lead to amplification of requirements without reference to the unique structure of M&Os. Specifically, substantive policy continues to be created in numerous places beside the directives system, including acquisition letters, DEAR, Federal Acquisition Regulation (FAR), and through the inclusion of numerous external "standards," which may have originally been intended as guidance. There should be clear governance processes to include stakeholder input early in policy development for all areas of policy, as well as clear channels to eliminate bad requirements injected through the acquisition side.		

NLDC ISSUE		DOE ACTION
6A	Policies of all kinds fail to distinguish between M&Os and other types of contractors or federal employees. This is especially in true in acquisition regulations, where the flow down to a "contractor" has been taken as the requirement to flow down to all M&Os.	***DOE and the NLDC agreed to delete this item early in the process as its purpose was unclear.***
6B	DOE has multiple "catch all" directives that add no value and have become "audit-bait" for overseers throughout the Department. In particular, the Quality Assurance Order should be eliminated; it is unnecessary, overly broad, and invites inefficient modes of oversight and management. As DOE seeks to reinvigorate the M&O model, it is critical to remove requirements that are simply good management practices and instead focus on the overall performance of the contractor and its skill in choosing among good management practices to produce great research and production results. Turning good management practices like quality assurance into requirements invites well intentioned, but ultimately negative, oversight models, leading to a focus on compliance instead of strategic investment. For the small number of areas where detailed quality assurance requirements are necessary (e.g., high-risk nuclear facilities), the requirements should be delivered via a contract clause closely tailored to the exact scope of work that presents the hazards. These requirements should, on face, be parallel with those that would be delivered to any research and development contractor or grantee conducting similar work. Overall, DOE must limit the high-level strategic models it imposes on the M&Os to the most critical ones—performance-based contracting and Contractor Assurance Systems (CASs).	***Integrated Management System (IMS).*** The IMS team developed an Enterprise Risk Management tool, which is being used to review/revise contractor human resources and real property management-related requirements. The tool is also being used to develop other Department directives.
6C	Acquisition Letters: Acquisition Letters have been promulgated without the normal review and due	***Acquisition Letters.*** Established collaboration process with the programs and laboratories for acquisition letters. Eliminated 2

	NLDC ISSUE	DOE ACTION
	consideration of rule making. Essentially, Acquisition Letters bypass input from both the programs and the contractors. Acquisition Letters that impact the contractors need to go through the formal process for rule making with adequate time for input from stakeholders and appropriate governance. Letters we consider unnecessary and that should be revoked are Acquisition Letter (AL) 2005-12 on Meal Costs and AL 2005-11 on Home Office Expenses because both subjects are well addressed by FAR and CAS; AL 2010-06, which amplifies and misrepresents Office of Management and Budget (OMB) requirements on IPv6 and applies them inappropriately to M&Os; and AL 2005-10, which misrepresents DOE's implementation of Homeland Security Presidential Directive 12 (HSPD-12).	acquisition letters of concern (Internet Protocol version 6 (IPv6), HSPD-12). Issued acquisition letter on home office expenses using the new process on 10/14/11.
7. General Issues and Quick Fixes **Problem:** A number of general issues were submitted that don't fall into the previous categories, but instead point to very specific problems with somewhat easy fixes. These are listed below.		
7A	Allow national laboratories to participate on a nonexclusive basis with teams responding to Requests for Proposals (RFP). Currently, the FFRDC restrictions have been interpreted by DOE to prevent it. Furthermore, interpretation of what constitutes competing with private industry has been inconsistent across the DOE complex. In some cases, as long as the federal agency states in the solicitation that national laboratories may respond, that is sufficient notice to all bidders that the national laboratories are available to be part of a proposal team. Some local DOE offices, however, require more specific language in the solicitation before they will approve participation by a national laboratory.	***Participation in RFPs.*** Agreed not to pursue at this time.

	NLDC ISSUE	DOE ACTION
7B	Quarterly apportionments impact the lab in several ways. 1) Procurement delays and increased carryover: Many projects have subcontracts where full funding levels are needed, e.g., purchasing equipment. This results in delaying the execution of subcontracts until later in the year, resulting in higher uncosted levels. 2) Work stoppages due to inadequate funding levels. 3) Missed research milestones.	***Apportionment Scheduling*.** OMB may be receptive to a proposal to apportion funding for 4-5 months rather than the standard 3 months; however, the plan cannot be implemented until DOE receives its enacted full-year appropriation.

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APPENDIX B: INDIVIDUALS AND ORGANIZATIONS CONTACTED

(Titles and locations listed are as of the time of the Academy's contact.)

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APPENDIX C: BENCHMARKED NON-DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS

This appendix provides more detailed information on the 6 Federally Funded Research and Development Centers benchmarked for the study.

- C-1: Lincoln Laboratory
- C-2: Jet Propulsion Laboratory
- C-3: Center for Advanced Aviation System Development
- C-4: National Defense Research Institute
- C-5: Frederick National Laboratory for Cancer Research
- C-6: National Radio Astronomy Observatory

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BENCHMARKED NON–DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER MASSACHUSETTS INSTITUTE OF TECHNOLOGY'S LINCOLN LABORATORY

Name: Lincoln Laboratory (LL)

Contractor/Manager: Massachusetts Institute of Technology **(**MIT)**—**university

Sponsoring Agency: Office of the Secretary of Defense (OSD), Assistant Secretary of Defense for Research and Engineering (ASD (R&E))

Facility Owner: Department of Defense (DoD)/Air Force (AF)**—**located on Hanscom Air Force Base

Approximate Budget: About $952 million for fiscal year (FY) 2012

Staffing: Actual FY 2011 staff levels are about 3,380**—**1,780 science & technical employees (STE's). STE's are subject to an annual congressional STE ceiling. Congress sets the total STE ceiling for all DoD Federally Funded Research and Development Centers (FFRDCs), and the Undersecretary of Defense for Acquisition, Technology & Logistics (USD (AT&L)) allocates that total ceiling among LL and the other DoD FFRDCs. The total DoD STE ceiling for FY 2013 is 5,750, with LL allocated 1,102. This ceiling does not apply to technical staff funded by non-DoD work for others (WFO) or to technical staff performing certain DoD intelligence work. The STE ceiling is binding for LL's annual DoD work, which forces LL to choose among DoD research and development (R&D) requests.

Contract Details: LL has a 5-year sponsoring agreement with the ASD (R&E) and an unfunded no fee master contract with DoD that AF manages. The master contract is modified as LL obtains funds for specific research from various DoD agencies and offices. The contract does not contain any contract term extension incentives. The sponsoring agreement is normally renewed (not re-competed) pending findings from the comprehensive review performed by ASD (R&E) when the sponsoring agreement termination date nears.

Funding Sources: LL receives on average about 80% of its total annual budget from various DoD agencies; the remaining 20% is WFO obtained from other federal agencies. Because LL's master contract is unfunded, it must seek DoD R&D funds. LL receives no "core funding," similar to RAND's National Defense Research Institute. In essence, virtually all LL funding is on a WFO basis. ASD (R&E) does provide a small amount of annual funds (about 3% of total annual LL funding) for "discretionary" lab directed R&D in areas where DoD has long-term needs. The sponsoring agency staff noted that there is a greater demand for the LL's R&D services among DoD clients and customers than can be met given its STE ceiling.

LL does not receive separate funding for administrative, operations, and maintenance costs for DoD-owned equipment and facilities. Within the $952 million FY 2012 total budget, LL established a facilities operating budget of $55 million. LL funds this facilities operating budget

with resources from the overhead rate assessed on each approved R&D project. The LL overhead rate reflects a balance between administrative support, operational, and infrastructure funding needs and the need to be competitive in securing sufficient annual R&D funding to support existing staff. LL is responsible for maintaining the buildings it occupies and the equipment it uses, and for security and safety within those buildings. AF provides security, fire protection, and some infrastructure support as part of Hanscom base maintenance.

Governance:

- **Relationship with Contractor/Manager:** The LL Director reports to MIT's Office of Provost through the Vice President for Research. LL is a department of MIT and its employees are MIT employees, subject to MIT's human resources, environmental, safety, and health (ES&H), security, and other policies. LL's Director also develops specific policies to respond to unique or special DoD operational requirements, which are submitted to both MIT and DoD for approval. MIT sets salary and benefit levels for all LL staff. MIT's audit division performs periodic audits of LL operations, particularly financial operations. An independent MIT LL Advisory Board—"Visiting Committee"—does a semi-annual review of R&D work and other LL operations to assess the quality of management, staff, internal processes, and the value of R&D to DoD and national needs. This Advisory Board also provides strategic guidance on technological trends and future directions for LL R&D and monitors evolving relations among the academic community, LL staff, and industry.

- **Relationship with Sponsoring Agency:** The agency sponsor—ASD (R&E)—ensures that the approved project work for DoD and other federal agencies is appropriate for an FFRDC and conforms to DoD FFRDC policy guidelines; it includes these processes and requirements in the master contract. ASD (R&E) also chairs a DoD Joint Advisory Committee (JAC) that meets annually to assess and approve the direction of LL's proposed research program relative to DoD R&D needs; reviews the results of DoD agency sponsor evaluations of LL performance; and provides a summary annual report on LL performance. The annual JAC assessment also helps determine the level of next year's funding for ongoing, multi-year projects and awards for new or additional R&D work. Members of the JAC include the principal DoD sponsors of LL R&D, such as AF, Army, Navy, the Defense Advanced Research Projects Agency, and intelligence agencies. Specific DoD funding agencies (as well as WFO funding agencies) establish performance requirements through statements of work and project descriptions for each funded project, monitor progress, and evaluate project performance.

- **Program Oversight/Guidance:** DoD has a formal FFRDC management plan (updated April 25, 2011) that provides guidance and establishes policies and procedures for managing and using all DoD FFRDCs. USD (AT&L) implements this management plan.

Major Activities: LL is an R&D FFRDC that focuses on developing and prototyping innovative technologies and enhanced capabilities to meet national security needs in the following major

areas: space and air traffic control; air and missile defense; communication systems; intelligence, surveillance, and reconnaissance systems; chemical and biological defense; cyber security; and homeland protection.

Determining Goals/Work Priorities and Work Activities:

- **Setting Goals and Priorities—Annual/Long-Term Planning:** LL annually produces a 5-year Strategic Research Program Plan—the Grey Book. An internal LL Steering Committee—chaired by the LL Director and comprised of LL division heads, other LL staff, and the MIT Vice President for Research—develops the Grey Book and then submits it for review by the JAC executive committee and approval by the full JAC. The approved Grey Book only establishes LL's R&D priorities for potential DoD sponsors. Actual work is contingent on available appropriations and LL's ability to secure funding from DoD agency funding sponsors.

- **Work Authorization Process:** LL and DoD funding sponsors negotiate funding levels for ongoing multi-year projects as well as new projects and the work tasks, schedules, costs, and deliverables for each approved project. Performance expectations are included in approved project descriptions—statements of work. The approved amounts, performance expectations, and guidance are incorporated into the master contract by the AF contracting officer. On average, LL undertakes about 500 specific projects annually. About 80-85% of LL's annual work represents ongoing work, funded through annual appropriations.

- **Lab Flexibility:** LL establishes initial R&D priorities through the annual update of its 5-year Strategic Research Program Plan. Because LL's STE ceiling is a binding constraint, LL has the ability to select which projects being proposed by DoD agency sponsors it will undertake, consistent with priorities established in the JAC-approved Grey Book.

  LL receives a small amount of discretionary R&D funds annually from its sponsoring agency—ASD (R&E)—to support innovative R&D to meet strategic long-term DoD needs.

  LL has flexibility in hiring, setting salaries for its staff, and assigning staff to specific R&D projects. MIT approves salary and hiring decisions. DoD monitors costs per STE, and there are incentives for LL to control these costs to remain competitive.

Performance Expectations and Evaluation Process:

- **Types of Evaluations:** R&D project sponsors determine the frequency and nature of project evaluations, formal written reports, status meetings, etc. In general, they have frequent meetings/teleconferences with LL division directors/project staff to monitor progress and/or address emerging issues.

  AF also runs an annual review process of LL performance that collects project sponsor assessments and prepares summary ratings for LL. Each project sponsor completes an

annual electronic AF evaluation survey consisting of standards questions that focuses on the technical quality, quality of documentation, impact on DoD R&D needs, and 3 operational issues—cost management, schedule management (i.e., timeliness of project completion), and financial management reporting. The survey also offers space for narrative explanations from project sponsors, especially for any negative ratings. The results of this survey are reviewed by the JAC and are included in the annual JAC assessment of LL's performance in meeting high priority DoD R&D goals.

- **Reviews of Operational Activities and Audits:** MIT and LL policies govern operational activities at the LL work site. Most of these requirements flow from other federal agencies (e.g., Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), the Office of Management and Budget (OMB), etc.), but some respond to unique DoD needs. To address these unique DoD operational requirements, LL develops specific policies and submits them to the agency sponsor for review and approval. The sponsoring agency and other DoD funding sponsors expect LL to comply with its internal policies and operational guidelines, particularly those addressing specific DoD requirements. DoD sponsors rely on the Defense Contracting Audit Agency (DCAA) and other audits to verify LL compliance with these approved policies. Generally, there are about 80 DCAA audit per year performed by 2 onsite DCAA auditors. In addition, the MIT audit division performs several audits annually, including more frequent audits of the LL financial and accounting systems.

- **Evaluation Processes**: Project monitoring and evaluation by funding sponsors occurs periodically while the project is underway and annually through the AF sponsor evaluation survey. The JAC evaluation of LL programmatic performance occurs annually. The MIT Advisory Board assesses LL programmatic and operational performance semi-annually. Finally, there is the comprehensive review of LL performance undertaken once every 5 years as the sponsoring agreement nears expiration.

- **Feedback/Impact of Evaluations:** The most important feedback on performance, and LL's key performance motivator, is whether the DoD sponsors decide to continue funding ongoing projects or fund additional R&D, i.e., survival in the competitive DoD R&D market. LL needs to maintain its viability as a "fully funded" FFRDC. MIT's strong desire to maintain its reputation for excellence in R&D and technological innovation in serving the Nation's national security needs also is a compelling motivation for LL performance.

Fee Determination: There is no fixed or performance fee.

Oversight Procedures:

- **Site Office**: Not applicable. The AF's onsite contracting officer administers the contract; 2 DCAA auditors perform required audits.

- **Other Entities:** In addition to LL's funding sponsors, key entities providing oversight of LL programmatic and/or operational activities are the JAC and MIT's Advisory Board.

DCAA and the MIT auditing division also perform over 80 audits annually of various LL management systems and operational activities.

- **Systems:** The AF annual electronic survey is the major evaluation system. Individual DoD clients use their own systems to maintain data on priorities, performance measures, timelines in each statement of work, and required meetings/reports to evaluate progress.

Limitations/Issues: The sponsoring agency and DoD clients are highly satisfied with LL's performance, and the LL Director is very satisfied with the level and degree of DoD oversight. The programmatic oversight provides a useful strategic assessment of the long-term value of LL's proposed R&D relative to DoD's needs and more immediate feedback on specific project progress. Operational issues are delegated to the Director to resolve consistent with approved internal MIT/LL policies and procedures.

LL management notes that a continuing concern is the deterioration of aging lab infrastructure and the need for additional funding to repair and maintain critical facilities. MIT has used third-party financing to finance the construction of its new South Lab facility on Hanscom Air Force Base. MIT's 20-year note used to fund the approximately $300 million in construction costs will be fully repaid in 2014. LL has amortized this note with overhead funds from approved R&D projects. MIT owns the building until 2034 when the AF acquires title to it.

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BENCHMARKED NON–DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER CALIFORNIA INSTITUTE OF TECHNOLOGY'S JET PROPULSION LABORATORY

Name: Jet Propulsion Laboratory (JPL)

Contractor/Manager: California Institute of Technology (CIT)—university

Sponsoring Agency: National Aeronautics and Space Administration (NASA)

Facility Owner: NASA

Approximate Budget: About $1.6 billion for FY 2012

Staffing: JPL has about 5,000 staff; all are CIT employees. JPL does not face any formal staff ceiling. It also has about 200-300 contract employees that provide specific support services.

Contract Details: NASA has recently executed a new 5-year cost plus fixed fee contract with CIT to manage JPL. The $21 million annual fee is fixed for the duration of the contract. The contract does not contain any contract term extension incentives. It has been renewed without competition, although NASA could decide to re-compete, depending upon the results from its comprehensive review prior to the current contract termination date.

Funding Sources: JPL receives on average about 60% of its total annual budget directly from NASA, primarily from the Science Directorate. Some of these core funds appear as line items in the NASA budget (e.g., the Mars Rover/Lander project). JPL seeks the remaining 40% from various NASA and other federal agency clients. Work for Others (WFO) funds account for about 10-12% of JPL funding; virtually all WFO funds are from DoD. All funds including WFO flow through the NASA contract.
JPL has received small amounts of funds from the Office of Strategic Infrastructure within the Mission Support Directorate to maintain or rehabilitate some of the NASA-owned infrastructure. This funding level has averaged less than $10 million over the last 3 fiscal years and covers only a small amount of required annual maintenance costs. JPL does not receive any additional separate funding for administrative, operations, and maintenance costs for NASA-owned equipment and facilities. The vast majority of these costs are funded through the overhead rate assessed on each approved R&D project. The JPL overhead rate reflects a balance between administrative support, operational, and infrastructure funding needs and the need to be competitive in securing sufficient annual R&D funding to support existing staff.

Governance:

- **Relationship with Contractor/Manager:** The JPL Director is a Vice President of CIT and a member of the CIT faculty. All JPL employees are CIT employees and subject to CIT personnel and human resources policies. The Oversight Committee of CIT's Board of Trustees meets semi-annually to review JPL operations and progress with ongoing R&D projects, and to assess the strategic value of the direction of JPL's

R&D program to NASA's and the Nation's space R&D needs. A CIT Visiting Committee comprised of established scientists outside the CIT/JPL universe also periodically reviews the body of JPL R&D work and provides advice on new areas or directions for future long-term R&D.

- **Relationship with Sponsoring Agency:** The agency sponsor—NASA—ensures that the approved project work for NASA and other federal agencies is appropriate for an FFRDC and meets high priority NASA R&D needs.

Program Oversight/Guidance: There is no general program guidance. CIT policies and procedures govern JPL operational activities.

Major Activities: JPL is an R&D FFRDC that focuses on the robotic exploration of space. JPL is currently conducting research with more than 2 dozen spacecraft to expand knowledge about the origin of the solar system and distant planetary environments.

Determining Goals/Work Priorities and Work Activities:

- **Setting Goals and Priorities—Annual/Long-Term Planning:** NASA's Strategic Management Council and its Mission Support Council set R&D priorities for NASA R&D needs, including work expected to be accomplished at JPL and the other 9 NASA Centers. The NASA Administrator chairs the Councils. The JPL Director is a member of both Councils and fully participates in the discussions. JPL has a long-term strategic plan that it views as a subset of the NASA strategic plan, which is developed by the Councils. The JPL plan is not updated annually. It focuses on how JPL's unique capabilities can support NASA's goals on astrophysics, planetary exploration, and other technical issues. JPL program area directors develop the plan in conjunction with their counterparts at NASA headquarters.
- **Work Authorization Process:** JPL's work is based on separate task orders for specific R&D projects. JPL receives about 400 task orders annually. All task orders, including those for WFO, are included in the NASA contract. Funds are allocated based on task orders, usually on a quarterly basis. About 20% of JPL's task orders account for about 80% of its total annual funding. About 90% of JPL's annual work represents ongoing work funded through annual appropriations.
- **Lab Flexibility:** JPL cannot shift resources between task orders. However, it has substantial flexibility working with NASA counterparts to define specific milestones for work activities under each task order. JPL also allocates staff to specific R&D projects. CIT's human resources policies determine JPL staff salaries and benefit packages.

Performance Expectations and Evaluation Process:

- **Types of Evaluations:** Performance expectations are established jointly between JPL and NASA staffs as task orders are placed into the contract. NASA project sponsors and JPL staff agree on the work tasks, schedules, costs, and deliverables for each approved project. There are monthly reviews on projects to ensure that the approved milestones, deliverables, and costs are on target. Major approved projects also contain identified Key Decision Points (KDPs). Science Review Boards comprised of JPL, NASA, CIT scientists, and occasionally outside experts review those projects at the KDPs to assess progress and identify/discuss any emerging issues.

The CIT Board of Trustees' annual review of JPL's performance focuses not only on the effectiveness and efficiency of performance on current projects, but also on an assessment of JPL's strategic contribution to NASA and the broader science community R&D priorities in JPL's areas of expertise.

- **Reviews of Operational Activities and Audits:** CIT and JPL policies govern operational activities at JPL. Most of these requirements flow from other federal agencies (e.g., OSHA, EPA, OMB, etc.). In some cases, JPL has developed unique policies and procedures to address specific NASA issues and concerns. NASA generally relies on JPL to comply with its internal policies guidelines. NASA also relies on DCAA, Inspector General (IG), and other audits to verify JPL's compliance with these approved policies.

  NASA's Office of Safety and Mission Assurance (OSMA) also conducts a comprehensive Institutional Facility Operational Safety Audit for all 10 NASA Centers, including JPL, once every 2-3 years.[1] These safety audits are done on site by an OSMA headquarters team, sometimes supplemented with a NASA site office staff member. The results are reviewed with JPL and NASA site office staff to identify any immediate changes required. These results and the corresponding responses to them also are included in the comprehensive review performed at the end of the contract term to determine NASA's continuing need for the FFRDC (JPL) and whether the sponsoring agreement and contract with CIT to manage JPL should be renewed.

  Similarly, the Office of Strategic Infrastructure within the Mission Support Directorate also conducts a comprehensive environmental and infrastructure condition review every 2-3 years for JPL and the other 9 NASA Centers. These results also are reviewed with JPL and site office staff, and JPL must indicate how it will address any critical deficiencies identified. The site office includes the results from these environmental and infrastructure reviews in the 5-year comprehensive review it prepares.

- **Evaluation Processes:** Some NASA evaluation processes have changed with JPL's shift from a performance incentive fee to a fixed fee contract. The principal change was the elimination of the annual review process conducted by NASA's Award Fee Evaluation Board. This review involved all offices sponsoring projects at JPL and produced an overall rating for JPL that determined the amount of the annual incentive award fee pool ($22 million) to be awarded. In addition to the performance evaluations from each NASA sponsor, the Board also reviewed NASA's and JPL's informal monthly reviews, JPL's self-assessments produced for each project, and KDP reviews. Each NASA sponsor had its own evaluation criteria, and the Science Directorate tried to "normalize" these assessments to provide a comparable assessment base for Board review.

  NASA and JPL staff spent a considerable amount of time producing the different assessments; discussing and resolving, where possible, any disagreements; establishing the overall JPL rating; and determining the amount of the incentive fee awarded each year. The NASA site office estimated the administrative costs for this Award Fee Evaluation Board process ranged from $1 million to $1.5 million annually. However, the difference in the amount of incentive fee awarded each year was less than 5% of the fee pool. NASA and JPL, therefore, concluded that the differences in incentive fees awarded

[1] OSMA staff note that budget restraints have stretched these comprehensive safety audits to once every 5 years.

annually were less than the administrative costs, and that the process diverted JPL and NASA staff resources from their primary science and R&D missions.
NASA and JPL still conduct informal monthly reviews of JPL's progress in meeting approved project milestones contained in specific contract task orders. The formal KDP reviews also are still conducted. The periodic NASA headquarters-directed safety and environmental and infrastructure reviews also continue without any significant change. NASA and JPL staff are satisfied with this more streamlined process that focuses on JPL achievements on critical milestones and reviews of major projects at their KDPs.

- **Feedback/Impact of Evaluations:** JPL receives immediate feedback on specific project performance during the informal monthly reviews. In addition to the ability to secure renewed funding for ongoing work and new funding for proposed R&D, a key performance motivator is CIT's strong desire to maintain its reputation for excellence in R&D and technological innovation in serving NASA's and the Nation's space exploration and astronomical science R&D needs.

Fee Determination: There is no incentive performance fee.

Oversight Procedures:

- **Site Office:** There is a small NASA site office at JPL—about 23 full-time equivalents (FTEs)—whose primary role is to administer the sponsoring agreement and the cost plus fixed fee contract. The site office conducts no independent programmatic or operational reviews of JPL activity. These are conducted by various NASA headquarters staffs. Site office staff may participate in the periodic, headquarters-run safety and environmental reviews. The site office does prepare the comprehensive review at the end of the contract/sponsoring agreement 5-year term, relying on input from NASA headquarters staffs for the assessments of JPL's programmatic achievements and management of operational risks. There also is a small group on site—about 20 FTE—from the IG's office that conducts periodic audits of various JPL operations. DCAA auditors also are on site at JPL.
- **Other Entities:** The JPL Director has appointed a special advisory committee to review JPL's activities annually and provide an oral report on the effectiveness of those activities, any problem areas identified, and suggested corrections or changes to resolve them. CIT's internal audit committee undertakes a range of annual audits on JPL operational activities and management systems/procedures for controlling priority operational risks. DCAA and the IG's office also perform a range of annual audits on financial controls and other operational issues at JPL.
- **Systems:** JPL's internal management systems produce both electronic and paper reports for NASA headquarters staff to assist in monitoring progress on project milestones and to assess and resolve any issues identified during KDP reviews.

Limitations/Issues: NASA's sponsoring organization and other NASA sponsors appear to be highly satisfied with JPL's performance. The JPL Director and key staff also are very satisfied with the level and degree of NASA oversight. The more streamlined programmatic oversight focuses on specific project performance and emerging scientific issues at key decision points for major activities and provides more immediate feedback on both. Operational issues are

delegated to the JPL Director and his staff to resolve consistent with approved internal CIT/JPL policies and procedures.

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BENCHMARKED NON–DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER MITRE'S CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT

Name: Center for Advanced Aviation System Development (CAASD)

Contractor/Manager: MITRE Corporation—nonprofit

Sponsoring Agency: Federal Aviation Administration (FAA) (Next Gen Office)

Facility Owner: MITRE Corporation

Approximate Budget: About $160 million in FY 2012; $80.8 million is base funding, with the remainder, "industrial funds," sought from other FAA clients. Work for others (WFO) for non-FAA agencies is about 5% of the total CAASD work activity, including some international funds.

Staffing: Actual FY 2011 scientific and technical employee (STE) levels for FY 2011 were about 480, of which 270.5 were supported by base funds. CAASD has an STE congressional ceiling of 600. Projected total CAASD staff for FY 2012 is about 620, with 20 staff years supporting international projects. All staff are MITRE employees; MITRE employees can work for any of the 5 MITRE managed Federally Funded Research and Development Centers (FFRDCs), depending upon their skill sets and the need for specific skills in each FFRDC at a given time. Staff hours are allocated to individual FFRDCs based on the amount of work performed for each. Senior FFRDC management staff are assigned to a specific FFRDC, however.

Contract Details: CAASD has a 5-year sponsoring agreement with FAA for FY 2010 through FY 2015, with a 5-year renewal. CAASD perceives this to be a 10-year contract. Accompanying this sponsoring agreement is a cost reimbursable contract with a small fixed fee—less than 2% of total FAA funding—which is set at the start of the contract and is based upon the negotiated fee rate. The fee applies throughout the contract term, including the 5-year option, if exercised. The contract specifies the work to be performed each year and is amended to reflect these annual decisions. There are no contract award terms or incentive fees in the contract. The contract has 1 5-year renewal option that can be renewed further, depending upon the outcome of the comprehensive review. FAA also could decide to re-compete the contract, but that has not been done since CAASD's inception in 1990 as a separate FFRDC.

Funding Sources: About half of CAASD's annual funding is base funding identified as a line item in FAA's Facilities and Equipment annual budget ($80.8 million for FY 2012). The rest of the CAASD annual budget is "industrial funding" that CAASD seeks from other FAA clients and WFO from non-FAA clients. The total projected CAASD budget for FY 2012 is about $160 million.

Governance:

- **Relationship with Contractor/Manager:** The CAASD general manager is a senior MITRE Vice President and reports to the MITRE President and its Board of Trustees. MITRE's business is to manage CAASD for FAA and 4 other FFRDCs for different federal agencies. MITRE corporate policies apply to all 5 of its managed FFRDCs; they govern staff hiring; salaries and benefits; and the standard range of operational risks, e.g., safety, security, environmental concerns, financial accounting and costs controls, and sub-contracting—as well as conflict of interest issues key to all FFRDC operations. These policies are defined in MITRE's Organizational Policies & Procedures manual.

- **Relationship with Sponsoring Agency:** The agency sponsor—FAA (Next Gen Office) and more specifically, the CAASD program officer within Next Gen—ensures that approved project work for Next Gen, other FAA clients, and any WFO for non-FAA sponsors is appropriate for its FFRDC and meets critical FAA R&D needs as established in FAA's National Aviation Research Plan (NARP), the Next Gen Implementation Plan, and Destination 2025 planning documents, which are submitted to Congress.

  FAA's FFRDC Executive Board (FEB), co-chaired by the Next Gen Assistant Administrator and the Associate Administrator for Air Safety, meets semi-annually to approve CAASD's proposed 5-year long-range plan, annual work plan, and budget proposals; assess CAASD's performance; and review broad policy matters.

  FAA also has an Outcome Management Team (OMT), chaired by the Next Gen chief scientist and comprised of FAA office directors sponsoring specific CAASD R&D activities. The OMT reviews and assesses CAASD's performance quarterly; provides guidance for the development of CAASD's detailed annual Product Based Work Plan (PBWP); reviews and approves the PBWP; and reports its assessments to the FEB.

- **Program Oversight/Guidance:** MITRE's corporate policies govern operational activities and establish procedures for managing and controlling operational and programmatic risks at all 5 FFRDCs that MITRE manages.

Major Activities: CAASD is an R&D FFRDC conducting a continuing program of research, development, and engineering to advance the safety, security, effectiveness, and efficiency of aviation in the U.S. and around the world.

Determining Goals/Work Priorities and Work Activities:

- **Setting Goals and Priorities—Annual/Long-Term Planning:** The FEB's first meeting in the March/April timeframe provides guidance to help CAASD develop its long-range plan for the next planning cycle. The guidance reflects FAA's long-term R&D priorities identified in the NARP, the Next Gen Implementation Plan, and Destination 2025 planning documents. The approved long-range plan is reviewed and revised, as

necessary, with input from the OMT and submitted to the FEB for review and approval at its August/September meeting. CAASD's long-range plan focuses on its "core" work program—the major CAASD work activities that are ongoing over multiple years, albeit funded annually. Specific project goals and milestones are then established in CAASD's annual PBWP. The OMT maps these proposed CAASD goals and objectives in the PBWP to the FAA goals and to the 12 major outcomes established in the Next Gen Implementation Plan.

- **Work Authorization Process:** Once the OMT approves the PBWP, FAA outcome managers for specific projects work with their CAASD counterparts and the FAA Chief Financial Officer (CFO) to allocate base funds and any "industrial funding" to approved work activities. Base funds are allocated by specific project when they are identified separately in the FAA budget. Industrial funding clients work with the CFO to allocate funds to CAASD as specific projects are approved. On average, CAASD has about 55 individual projects underway annually. About two-thirds of these projects are core activities that continue for multiple years.

- **Lab Flexibility:** The PBWP identifies milestones, outcomes, and expected costs for each major CAASD approved work activity. This defines what is to be done, but CAASD has the flexibility to allocate staff to accomplish specific tasks and to determine how the work will be accomplished. When unanticipated circumstances arise, CAASD can propose changes to milestones or other parameters in the contract with the approval of CAASD management, the cognizant FAA outcome manager, and the CAASD program manager (who also serves as the executive secretary for the OMT). They use an automated system to make such changes. In addition, a small part of CAASD's annual work is focused on more experimental work, e.g., the Mission-Oriented Investigation and Experimentation Outputs (MOIEO). While CAASD develops a proposed plan for this work in its PBWP, this is usually more flexible than other work activity. MOIEO work absorbs about 20 CAASD STE.

  CAASD also has flexibility in seeking WFO. But the OMT must approve all WFO under the following criteria:

  - FAA's technical mission must benefit from the WFO.
  - The WFO does not impede approved work in the PBWP.
  - There is no adverse impact on any other FAA or other CAASD customer programs.
  - The WFO does not place CAASD in competition with other R&D entities or the private sector.

<u>Performance Expectations and Evaluation Process</u>:

- **Types of Evaluations:** The OMT meets quarterly as the Quarterly Product Review Board (QPRB) to assess progress on project milestones in CAASD's approved PBWP. The OMT also reviews any changes in the PBWP at its quarterly meetings. Semi-annually, the outcome manager participants of the OMT provide a numerical rating for CAASD's

performance on each of its 12 key outcomes. The rating is on a 4-point scale and assesses the degree of success/progress in terms of technical content, adherence to time schedule, and costs. The FEB reviews these semi-annual summary evaluations at its semi-annual meetings. CAASD provides monthly cost management reports, quarterly program progress reports, and self-assessments of accomplishments to the outcome managers monitoring and assessing CAASD's work progress for the OMT. There also are frequent informal meetings and conversations between OMT outcome managers and their CAASD counterparts. Virtually all of the information is shared electronically.

- **Reviews of Operational Activities and Audits:** MITRE corporate policies govern operational activities at the CAASD work sites. Most of these requirements flow from other federal agencies (e.g., OSHA, EPA, OMB, etc.). FAA clients and the sponsoring agency rely on CAASD to comply with MITRE policies and guidelines. As an FFRDC, CAASD also has strict conflict of interest guidelines to meet and occasionally, clients will have unique security requirements that may require modification or adaptation of general MITRE corporate policies to ensure full compliance. Clients rely on DCAA and other audits to verify CAASD's compliance with MITRE corporate policies

- **Evaluation Processes:** Outcome managers meet frequently with their CAASD counterparts to review progress on specific projects. Periodic internal MITRE Corporation meetings with all MITRE-managed FFRDCs assess both programmatic and operational performance and review any emerging issues at CAASD and MITRE's other FFRDCs. The QPRB quarterly meetings provide a formal assessment of total CAASD project performance. The FEB semi–annual meetings address broader CAASD programmatic performance relative to planned FAA R&D needs. The MITRE Board of Trustees Aviation Advisory Committee meets 3 times per year to evaluate CAASD performance relative to emerging aviation R&D and technological issues. Finally, there is a comprehensive review of CAASD programmatic and operational performance once every 5 years as the sponsoring agreement nears expiration.

- **Feedback/Impact of Evaluations:** CAASD receives direct feedback from the FEB, the OMT, the FAA outcome managers, and the CAASD program manager during the semi-annual and quarterly meetings, and the more frequent informal contacts between FAA and CAASD staff. The key motivator for CAASD's performance is the ability to secure renewed funding for ongoing work, new "industrial funding," and obtaining approval for WFO. MITRE also places a very high value on continuing to manage CAASD operations as an FFRDC as that is its principal line of business.

Fee Determination: There is no performance fee. There is a small fixed fee—currently less than 2% of total FAA funding. MITRE Corporate uses the fee proceeds to fund interest expense on working capital and other MITRE borrowing; other unallowable costs under the Federal Acquisition Regulation; and staff educational and other quality-of-work-life activities.

Oversight Procedures:

- **Site Office:** Not applicable

- **Other Entities:** In addition to the FEB and the QPRB, MITRE Corporate periodically meets with all its FFRDCs to review programmatic progress and any operational issues. Members of MITRE's Board of Trustees meet annually with key FAA CAASD clients to obtain an independent assessment of CAASD performance for those clients. The Board also has an Aviation Advisory Committee that meets 3 times per year to discuss CAASD's progress and broad aviation issues to ensure CAASD is focused on the most critical FAA technical and strategic needs. DCAA performs audits on various CAASD operational systems, including travel management systems, financial controls, and forward pricing rate agreements. CAASD also is subject to OMB A-133 compliance reviews.

- **Systems:** CAASD provides all its reports to FAA electronically. FAA outcome managers track progress by accessing the electronic monitoring system. All MITRE operational policies and its Organizational Policies & Procedures manual are on line and accessible by MITRE staff electronically.

Limitations/Issues: Sponsoring agency and other FAA clients are highly satisfied with CAASD's performance. Funding uncertainty and the timing of appropriations approvals remain an ongoing concern, but CAASD's leadership has been able to manage these challenges.

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BENCHMARKED NON–DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER RAND'S NATIONAL DEFENSE RESEARCH INSTITUTE

Name: National Defense Research Institute (NDRI)

Contractor/Manager: RAND Corporation—nonprofit

Sponsoring Agency: Office of the Secretary of Defense (OSD), Undersecretary for Acquisition, Technology, and Logistics (USD (AT&L))

Facility Owner: RAND owns its own facilities or leases buildings.

Approximate Budget: About $50 million, but this does not include non-DoD work for others (WFO). WFO varies by year between 5-20% of the total budget; WFO averages about 10% of the total.

Staffing: Actual FY 2011 staff levels were about 163. NDRI's scientific and technical employees (STEs) are subject to a staff ceiling. Congress sets the total STE ceiling for all DoD FFRDCs and USD (AT&L) allocates that total ceiling to NDRI and the other DoD FFRDCs. The total DoD STE ceiling for FY 2013 is 5,750, with NDRI allocated 136. The STE ceiling does not apply to technical staff funded by non-DoD WFO (about 7 FTE annually) nor to technical staff performing certain DoD intelligence work (about 20 FTE). The STE ceiling is binding for DoD work, which forces NDRI to choose among DoD R&D research requests.

Contract Details: NDRI has a 5-year sponsoring agreement and an unfunded fixed fee master contract with USD (AT&L). The current fixed fee is 1.4% of the total DoD funds obtained, negotiated at the time the sponsoring agreement was renewed and set for the full-5 year contract term. The contract does not contain any contract term extension incentives. The sponsoring agreement is normally renewed (not re-competed) pending findings from the comprehensive review performed by USD (AT&L).

Funding Sources: NDRI receives on average about 90% of its total annual budget from various DoD agencies; the remaining 10% is WFO obtained from other federal agencies. Because NDRI's master contract is unfunded, it must seek other DoD R&D funds. NDRI receives no "core funding," unlike the other two RAND FFRDCs. In essence, virtually all NDRI funding is on a WFO basis. The sponsoring agency staff noted that there is a greater demand for NDRI's analytical research services from DoD funding sponsors and customers than can be met given its STE ceiling.

NDRI does not receive separate funding for administrative, operations, and maintenance costs for RAND-owned equipment and facilities. These are funded through the overhead rate assessed on each approved R&D project. The NDRI overhead rate reflects a balance between administrative support, operational, and infrastructure funding needs and the need to be competitive in securing sufficient annual R&D funding to support existing staff.

Governance:

- **Relationship with Contractor/Manager:** The NDRI Director also serves as a RAND Vice President and the head of one of RAND's internal divisions—the National Security Research Division. RAND corporate policies on pay and fringe benefits; hiring; promotions and other human resources issues; environmental, safety and health (ES&H) issues; and other security issues govern NDRI operations. Consistent with general RAND policies, the NDRI Director performs a risk assessment for each project to determine the degree of internal oversight needed; requires an internal peer review before products are released to the client; meets periodically with the RAND President to review issues; and meets semi-annually with the RAND Board of Trustees to review the quality, responsiveness, and impact of NDRI's analytical work. The Board makes the decision annually to reappoint the NDRI Director.

- **Relationship with Sponsoring Agency:** The agency sponsor—USD (AT&L)—ensures that the approved project work for DoD and other federal agencies is appropriate for an FFRDC and conforms to DoD FFRDC policy guidelines; USD (AT&L) includes these processes and requirements in the master contract. An NDRI Advisory Board, comprised of senior officials from OSD, the Joint Staff, the Navy, and other NDRI DoD project sponsors and chaired by USD (AT&L), semi-annually assesses the direction of NDRI proposed research relative to DoD's research and analytical needs; reviews the results of DoD agency-sponsor evaluations of NDRI performance; and provides a summary annual report on NDRI performance. The Advisory Board's annual assessment helps determine the level of the next year's funding for ongoing, multi-year projects and awards for new or additional R&D work.

- **Program Oversight/Guidance:** DoD has a formal FFRDC management plan (updated April 25, 2011) that provides guidance and establishes policies and procedures for managing and using all DoD FFRDCs. USD (AT&L) implements this management plan.

Major Activities: NDRI is a studies and analysis FFRDC that provides research and analytical services to specific DoD funding sponsors through its 5 research centers: international security and defense policy; acquisition and technology support policy; focus and resources policy; intelligence policy; and homeland security and defense.

Determining Goals/Work Priorities and Work Activities:

- **Setting Goals and Priorities—Annual/Long-Term Planning:** NDRI annually produces a 5-year Strategic/Research Plan. The NDRI Advisory Board conveys DoD priorities for research and analytical services to help NDRI formulate its proposed plan. The NDRI Advisory Board then reviews the NDRI proposed plan at its fall meeting. The final NDRI plan only establishes research and analytical priorities for potential DoD sponsors.

Actual work is contingent on NDRI's ability to secure projects from DoD customers and the availability of their appropriations.

- **Work Authorization Process:** NDRI and DoD funding sponsors/customers negotiate funding levels for ongoing multi-year projects as well as new projects. DoD funding agencies (as well as WFO funding agencies) establish performance requirements through statements of work and project descriptions for each funded project. R&D project sponsors and NDRI agree on the work tasks, schedules, costs, and deliverables for each approved project. As NDRI obtains funds for specific research projects from various DoD agencies and offices, the approved project funds and related performance requirements are added to the master contract. On average, NDRI undertakes about 110 specific projects annually. About half of NDRI's annual work extends beyond a fiscal year.

- **Lab Flexibility:** NDRI establishes initial R&D priorities through its 5-year Strategic/Research Plan, which is updated annually. Because the demand for NDRI's services exceed its capacity due to its STE ceiling, NDRI has the ability to select among the projects being proposed by DoD agency sponsors for those that are the most consistent with the priorities established in its Strategic/Research Plan.
  Fee income is pooled in the RAND President's office with other donor resources and is used to fund various discretionary analytical and evaluation projects. NDRI also receives a small amount of innovative R&D funds annually from its sponsoring agency to support innovative analytical research.

  NDRI has flexibility in hiring and setting salaries for its employees. RAND approves salary and hiring decisions. DoD monitors costs per STE, and NDRI has an incentive to control these costs to remain competitive.

Performance Expectations and Evaluation Process:

- **Types of Evaluations:** R&D project sponsors determine the frequency of project evaluations, formal written reports, status meetings, etc. They have frequent meetings/teleconferences with NDRI center directors/project staff to monitor progress and/or address emerging issues and conduct final project reviews upon the projects' completion. The sponsoring agency, in conjunction with NDRI, performs an annual review of NDRI's performance. Each project sponsor completes an annual electronic NDRI sponsor evaluation survey that focuses on the technical quality, responsiveness, timeliness, and long-term value of the work performed. The survey consists of standard questions using a 5-point rating scale for each area surveyed, but also encourages narrative explanations from project sponsors, especially for any negative ratings. The results of this survey are reviewed by both NDRI and USD (AT&L). USD (AT&L) prepares a summary rating for NDRI that is shared with the NDRI Advisory Board.

- **Reviews of Operational Activities and Audits:** RAND corporate policies govern operational activities at NDRI work sites. Most of these requirements flow from other federal agencies (e.g., OSHA, EPA, OMB, etc.), and DoD funding sponsors and

sponsoring agency rely on NDRI to comply with RAND policies guidelines. As an FFRDC, NDRI also has strict conflict of interest guidelines to meet, and occasionally funding sponsors will have unique security requirements that may require modifying or adapting general RAND corporate policies to ensure full compliance. Funding sponsors rely on DCAA and other audits to verify NDRI/RAND compliance with RAND corporate policies.

- **Evaluation Processes:** NDRI funding sponsors periodically monitor and assess progress in meeting approved project milestones. Sponsors also provide an annual assessment of NDRI performance through USD (AT&L)'s NDRI sponsor evaluation survey. Aggregate NDRI programmatic performance assessments occur semi-annually during meetings of the NDRI Advisory Board. Operational and programmatic issues also are reviewed at periodic internal meetings between the NDRI Director and the RAND President and more formally at semi-annual meetings of the RAND Board of Trustees.

- **Feedback/Impact of Evaluations:** The most important feedback on performance is whether DoD sponsors decide to continue funding ongoing projects or fund additional R&D, i.e., survival in a competitive free market. RAND's strong desire to maintain a reputation for analytical excellence and responsiveness, and hence its continued viability as a "fully funded" FFRDC, also is a compelling motivator for NDRI's performance.

Fee Determination: There is no performance fee.

Oversight Procedures:

- **Site Office:** Not applicable

- **Other Entities:** Key entities providing oversight of NDRI's programmatic performance include the funding sponsors, the NDRI Advisory Board, and RAND's President and Board of Trustees. The latter 2 also provide oversight of NDRI operational performance. DCAA and other audits provide additional operational oversight.

- **Systems:** USD (AT&L)'s annual electronic survey is the principal evaluation system. Individual DoD clients use their own systems to maintain data on priorities, performance measures, timelines in each statement of work, and required meetings/reports to evaluate progress.

Limitations/Issues: The sponsoring agency and DoD funding sponsors are highly satisfied with NDRI's performance. The NDRI Director noted some minor concerns about limitations caused by the fixed STE ceiling. First, the STE ceiling is not adjusted for inflation so that over time, the ceiling has become more restrictive and has limited NDRI's DoD work. Second, USD (AT&L) began to manage the ceiling more actively this year and has reallocated some unused ceiling to FFRDCs with higher DoD R&D priority. Although NDRI was a beneficiary of this temporary increase in ceiling, the NDRI Director hopes that some of the temporary increase will be built into NDRI's future year STE ceiling base allocations to avoid disruptive staffing reductions.

BENCHMARKED NON–DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER SAIC-F'S FREDERICK NATIONAL LABORATORY FOR CANCER RESEARCH

Name: Frederick National Laboratory for Cancer Research (FNLCR)

Contractor/Manager: Science Applications International Corporation - Frederick Inc. (SAIC-F) a wholly owned subsidiary of SAIC, both for-profit entities

Sponsoring Agency: National Cancer Institute (NCI) within the Department of Health and Human Services (HHS)

Facility Owner: NCI/HHS owns the facilities on the main campus at Ft Detrick MD; some facilities on FNLCR's satellite campuses are leased. Any special equipment in leased buildings is owned by the government.

Approximate Budget: About $440-500 million for FY 2012. FY 2010 actual FNLCR budget was $438 million of which $345 million was from NCI. This budget, however, represents only costs to support contractor personnel. Federal NCI staff at FNLCR and their related costs are funded directly from the NCI budget. FNLCR does not have a unified, aggregate budget that includes both contractor and federal employee costs.

Staffing: FNLCR staff levels are about 2,700—a mixture of contractor and federal employees. The federal employees have been a growing percentage of FNLCR staff and now account for over 25% of total FNLCR staff—currently 700 FNLCR staff are federal employees. The FNLCR Director is a federal employee; he manages the federal staff at FNLCR and supervises the core day-to-day operations of the contractor SAIC-F.

Contract Details: NCI issued a performance-based cost plus award fee contract to SAIC-F for FNLCR in 2008. The total contract term is 10 years if all award term options are exercised. The base period term is 3 years, with 5 1-year renewals and a final 2-year renewal. Total contract costs over the full 10 years are $5.17 billion, including a total award fee pool of $85 million. The contract designates annual amounts during the contract term. The award fee pool starts at about $8 million annually, but increases by $0.14 million annually to a $9 million level in 2017/18. NCI expects to re-compete the contract in 2018.

Funding Sources: FNLCR receives about 79% of its total annual budget from NCI, and almost 20% from the National Institute of Allergy and Infectious Diseases (NIAID) within the National Institutes of Health. In addition, FNLCR obtains some small amounts of work for others (WFO) funds from other federal agencies. There is a small line item in the NCI budget that provides $8 million annually for building and infrastructure costs at FNLCR. These limited operational funds are supplemented with overhead rate funds from NCI, NIAID, and other WFO-funded projects.

Governance:

- **Relationship with Contractor/Manager**: The FNLCR Director is the NCI Associate Director for Frederick—a federal employee who reports to the NCI Director. SAIC-F only manages 1 of the 5 contracts in force at FNLCR—the Operations and Technical Support (OTS) contract. The other 4 contracts—Basic Research, Animal Protection, Computer Services, and Scientific Services—are managed by other contractors. However, the FNLCR Director controls all 5 contracts. The Chief Executive Officer (CEO) of SAIC-F is among the key personnel designated in the OTS contract, along with the 4 SAIC-F group leaders. Under each group leader, SAIC-F has several R&D Directorates that parallel FNLCR's organizational structure. NCI R&D scientists and clinicians work side by side with SAIC-F scientists in these various Directorates on approved R&D projects.

- **Relationship with Sponsoring Agency:** The agency sponsor—NCI—allocates funds and approves project work for FNLCR in conjunction with the FNLCR Director.

Program Oversight/Guidance: There is no general program guidance. FNLCR federal employees are subject to HHS policies, and many SAIC-F policies conform to these HHS policies. For example, SAIC-F has its own pay rates and benefit packages that are approved by the NCI contracting officer at FNLCR as part of the contract. However, when federal salaries were frozen, SAIC-F salaries also were frozen. Similarly, limitations on federal travel and conferences are applicable to SAIC-F staff. NCI staff at FNLCR believe it is important to maintain parity between contractor and federal scientists and clinicians working side-by-side on the same project.

Major Activities: FNLCR is an R&D FFRDC that focuses on the development of new technologies and the application of basic science discoveries into innovative agents for the prevention, diagnosis, and treatment of cancer and AIDS. R&D activities are concentrated in the following science fields and technical areas: genomics, proteomics, bioinformatics, imaging, animal models, nanotechnology, and biopharmaceutical production.

Determining Goals/Work Priorities and Work Activities:

- **Setting Goals and Priorities—Annual/Long-Term Planning:** FNLCR does not currently have a long-term strategic plan. SAIC-F staff contend that they cannot develop an FNLCR long-term strategic plan independent of NCI; they are perceived as the technical development arm for the various program divisions within NCI. As new basic research in individual NCI program areas generates prospective developmental areas, FNLCR must be able to shift to accommodate these new developments.

  Annual planning for FNLCR work activities is a joint effort with SAIC-F and NCI staff at FNLCR. The combined staffs develop proposals that are reviewed by the Technology Development Advisory Committee (TDAC). TDAC is an external committee of governmental, university and private sector scientists, chaired by the FNLCR Director. The TDAC reviews the staff-developed proposals for FNLCR R&D activities and advises the FNLCR Director on the major priorities to include in his annual FNLCR budget request to NCI. The FNLCR Director then develops his own budget request for FNLCR (contractor activity) and submits it to NCI for approval and inclusion in the NCI budget request. His budget request includes specific amounts for contractor R&D activities in the various NCI program areas; amounts for management and overhead; and the $8 million in funds for investments in facilities and infrastructure development and improvements at FNLCR.

- **Work Authorization Process:** FNLCR uses a "yellow task order" system to allocate funds for specific R&D projects. The FNLCR Director issues these once he receives funds from NCI (and NIAID) to support the approved annual budget. FNLCR undertakes about 300 "yellow task orders" annually. In FY 2011, it completed 289 yellow tasks. Most of FNLCR work extends beyond a single year.

- **Lab Flexibility:** The FNLCR Director has the flexibility to determine the specificity of each "yellow task order" and its funding within the NCI or NIAID amounts provided by major program area. SAIC-F has to comply with the limitations established in each "yellow task order." SAIC-F flexibility is limited to assigning particular contractor staff to work on each "yellow task order."

Performance Expectations and Evaluation Process:

- **Types of Evaluations:** NCI has issued a formal performance-based award fee evaluation plan for assessing SAIC-F's technical and programmatic performance on approved projects and the management performance of administrative operations at FNLCR. A Performance Evaluation Board (PEB) comprised of major NCI and NIAID program area Directors sponsoring R&D projects at FNLCR meets semi-annually to assess SAIC-F programmatic and operational performance. The FNLCR Director chairs the PEB. The PEB reviews reports on SAIC-F's performance prepared by NCI, NIAID and any other R&D funding sponsors as well as independent SAIC-F self-assessments of performance. SAIC-F also may provide the PEB comments on funding sponsor reports. Programmatic assessments address the following criteria:

- quality of technical/research support services, including the use of state-of-the-art technology
- rate of performance and timeliness of performance
- responsiveness of R&D activity to sponsor needs, including effectiveness of communication among team members and with sponsor
- productivity and efficiency of use of facilities, materials, and staff to achieve proposed outcomes
- scientific reporting including timely publication/dissemination of results
- safety of operations in conducting laboratory tests and experiments

- **Reviews of Operational Activities and Audits**: The PEB also reviews the effectiveness of SAIC-F operations management at FNLCR. These operational risk reviews focus on the following key areas:

  - leadership of key SAIC-F personnel and Directorate heads in meeting appropriate quality of communications, planning, and acquisition requirements, and the use of human resources
  - effectiveness of cost and financial management systems
  - reliability and efficiency of acquisition and logistical services and contract compliance and reporting
  - facilities maintenance and engineering
  - effectiveness of the contractor's environmental, safety, and health (ES&H) program, including the safety record regarding personal and industrial accidents

- **Evaluation Processes:** The sponsor reports and SAIC-F's self-assessments of its performance provided to the PEB evaluate performance under a 5-point rating scale from excellent to unsatisfactory. The PEB members then determine a numerical rating for each of the programmatic and operational areas assessed and recommend an award fee amount to the fee determining official. The amount of the award fee pool to be awarded has a range associated with each performance rating. For example, the amount of fee awarded for an excellent rating ranges from 91% to100%; for a very good rating the award fee range is between 76% and 90%; a satisfactory rating would warrant less than 50% of the award fee pool.

- **Feedback/Impact of Evaluations:** The SAIC-F CEO or other key personnel attend the PEB and receive immediate feedback regarding their performance ratings. The PEB chair also provides an oral summary of the PEB findings to SAIC-F key personnel. Each "yellow task order" has an NCI performance monitor who reviews monthly reports on contractor performance in meeting approved milestones and other requirements embedded in the "yellow task orders." Performance monitors provide immediate informal feedback to the contractor's principal investigators assigned to each project.

Fee Determination: The fee determining official (not a member of the PEB) can accept the PEB recommendations for the semi-annual award fee for SAIC-F or use the recommendations to guide the final award fee decision. The contract and performance evaluation plan specifies the

relative weights assigned to specific programmatic and operation areas, which are combined with the performance rating to calculate the final amount of the award fee pool awarded.

Oversight Procedures:

- **Site Office:** The FNLCR is an anomaly among the non-DOE FFRDCs benchmarked. The NCI site office has both an oversight function and works side-by-side with contractor staff on specific R&D projects. The FNLCR Director is a federal employee—the NCI Associate Director for Frederick.

- **Other Entities:** In addition to the PEB, the NCI Director has appointed an FNLCR Advisory Committee of 16 members who are recognized authorities in the biological and pharmacological specialty areas pursued at FNLCR. The full committee meets 3 times per year to review the portfolio of FNLCR R&D activities and proposed major new projects; evaluate FNLCR's performance; and assess whether projects are appropriately assigned to FNLCR. SAIC also has an ES&H group that periodically inspects and evaluates SAIC-F's ES&H program and management controls. There also are several audits of SAIC-F's operational activities conducted by other federal, state, and local agencies such as OSHA, local health agencies, and state environmental agencies.

- **Systems:** FNLCR uses an electronic award fee performance system to support the PEB evaluation and fee determination processes.

Limitations/Issues: With NCI approval, SAIC-F entered into a lease with a commercial developer to construct a building shell to meet a need for expanded facilities. SAIC-F funded the special equipment and interior structures needed to perform the R&D activities planned for the facility. SAIC-F was able to use NCI's authority under U.S. Code Title 42 Section 241(a) (7) Section 301(a) (7) to use appropriated project dollars to fund the special equipment and interior structures. The section states that "a contract…. for research or development, or both, may provide for the acquisition or construction by, or furnishing to, the contractor, of research, developmental or test facilities and equipment." This statutory authority was originally provided to the Secretary of Defense, but a subsequent law extended this authority to the HHS Secretary and his designees.

Under this arrangement, the commercial developer owns the shell and NCI owns the special interior structures and equipment. At the termination of the lease, the government has the right to remove its property from the building shell. SAIC-F staff claimed that this process significantly reduced the time to construct and outfit the facility and obviously required a much smaller upfront commitment of federal budgetary resources.

Because contractor and federal staff at FNLCR work side-by-side on individual R&D projects, the SAIC-F Operations Director monitors federal employee compliance with SAIC-F's ES&H policies and procedures. This is another example of the hybrid/anomalous nature of FNLCR's status as an FFRDC.

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BENCHMARKED NON–DOE FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER ASSOCIATED UNIVERSITIES, INC.'S NATIONAL RADIO ASTRONOMY OBSERVATORY

Name: National Radio Astronomy Observatory (NRAO)

Contractor/Manager: Associated Universities, Inc. (AUI)—university consortium

Sponsoring Agency: National Science Foundation (NSF)

Facility Owner: AUI owns or leases its facilities or buildings; NSF owns the equipment.

Approximate Budget: About $80 million annually, including operating funds for NRAO and the Altacama Large Millimeter Array (ALMA) in Chile. But this does not include funding for major facility construction—primarily ALMA—which has been as much as $150 million per year but is now about finished. There also is a small amount of work for others (WFO)—additional R&D grants awarded to NRAO staff from other federal agencies or private entities—that has been growing recently and now accounts for about 2-3% of the total NRAO budget.

Staffing: Actual FY 2011 staff levels were about 500. AUI has about 5 staff in DC.

Contract Details: NRAO has a 6-year cooperative agreement with NSF for FY 2010 through FY 2015 that specifies authorized amounts to be provided each year. The annual amounts include a nominal fixed fee—about $200,000 to $300,000—that is negotiated each year of the contract.

Funding Sources: NRAO receives its principal funding from NSF's Division of Astronomical Sciences (AST) within the Mathematical and Physical Sciences Directorate. Additional funds for major construction come from NSF's Major Research Equipment and Facilities Construction (MREFC) account. The total FY 2011 AST budget for NRAO was $44.3 million (with another $23.4 million for ALMA). The total NRAO budget for FY 2011 was about $130 million, including construction funds. Except for some construction funding, which is winding down, the R&D funds support ongoing operations and the use of NRAO's various radio telescopes in different locations.

Governance:

- **Relationship with Contractor/Manager:** The NRAO Director reports to the AUI President and its Board of Trustees. The AUI President is the principal investigator identified in the NSF cooperative agreement for NRAO and has frequent, informal contact with the NRAO Director. AUI approves NRAO's long-range and annual operating plans as well as NRAO's annual budget proposals submitted to NSF. Standing Committees of the AUI Board of Trustees periodically review NRAO's programmatic progress and operational activities.

- **Relationship with Sponsoring Agency:** The agency sponsor—NSF (AST)—receives and approves NRAO's annual and long-range plans and approves any additional proposals for outside funding beyond a certain threshold. The AST program officer also reviews quarterly and annual reports on NRAO's progress in meeting operational goals established in the annual plan.

Program Oversight/Guidance: NSF has no overall guidance for overseeing its 5 FFRDCs. Formats and content for required quarterly and annual reports are determined primarily by the NSF staff member overseeing the cooperative agreement.

Major Activities: NRAO is an R&D FFRDC that operates large arrays of radio telescopes at several sites in the U.S. and overseas (e.g., the ALMA project) to support astronomical research exploring the universe. These radio telescopes help scientists detect, measure, and evaluate the radio waves emitted by astronomical objects in an effort to better understand the evolution of the universe. NRAO maintains these radio telescopes and provides the astronomical community access to them to perform specific research tasks.

Determining Goals/Work Priorities and Work Activities:

- **Setting Goals and Priorities—Annual/Long-Term Planning:** NRAO annually produces a 5-year long-range plan (LRP), which also contains a strategic plan that sets out the NRAO/AUI vision, goals, and objectives for NRAO over the term of the cooperative agreement. Once AUI approves the plan, NRAO submits it to the AST program officer for approval during the first quarter of the fiscal year along with a more detailed annual program operating plan (POP). The AST program officer provides initial budget guidance for AUI/NRAO to develop the POP. Sometimes, the AST program officer may ask NRAO for a contingency plan outlining how it would adjust the POP should there be a 10% reduction in funding. The AST program officer also establishes a Program Review Panel—a peer review group of 5 experts external to NSF—to review and comment on NRAO's LRP and POP.

- **Work Authorization Process:** The annual approved POP identifies the specific activities planned by NRAO and performance requirements and expectations NRAO's base funding from AST for operations is identified in NSF's annual budget proposals to Congress, along with any separate funding for major construction or long-term major maintenance beyond the normal scope of AST operational funding. NSF allocates these

funds for NRAO's use and NRAO draws them down as needed. NSF does not make separate program or facility allocations (other than ALMA). NSF's Large Facilities Office (LFO) manages all large maintenance or construction funding. LFO has a manual that guides the types of oversight and required reports. The AST program officer is responsible for reviewing any reports.

- **Lab Flexibility:** NRAO establishes initial R&D priorities through its LRP and POP. NRAO has authority to change some spending during the year without prior NSF approval. NRAO allocates time and access to the various radio telescopes to meet approved astronomical R&D needs. NRAO allocates the operating funds it receives from NSF to each of its 3 major sites. Operating funds for ALMA are managed separately.

  All NRAO employees are AUI employees. NRAO has flexibility in hiring and setting salaries for its employees. However, NSF approves the appointment and proposed salary for the NRAO Director and gets notified of any significant changes in key personnel. Base AST funding includes conference funding; NRAO can seek NSF approval for additional conference funding, if needed.

Performance Expectations and Evaluation Process:

- **Types of Evaluations:** Performance expectations are set by NRAO/AUI in the annual POP and approved by the AST program officer. NSF holds NRAO accountable for meeting the milestones and deadlines established in the POP. NRAO provides quarterly reports to NSF on its progress in meeting performance objectives. NRAO also provides NSF an annual report on its overall performance. The AST program officer has the external Program Review Panel assess this report before meeting with NRAO to review overall annual performance. The AST program officer also provides AUI with a copy of the Program Review Panel's assessment of annual NRAO performance.

  NSF performs a comprehensive review of NRAO management and operations prior to the end of the cooperative agreement period to assess the ongoing need to retain the FFRDC status for NRAO and to determine whether to grant NRAO a one-time extension (up to another 5 years).

  AUI also conducts internal reviews of NRAO's management and operations. These reviews provide a current, immediate assessment of the effectiveness of NRAO's management of standard operational risks. The AUI Board of Trustees—22 senior scientists with multidisciplinary backgrounds (although about two-thirds are astronomers)—meets 3 times a year to assess internal NRAO operations and any programmatic issues. The AUI Board of Trustees also has several Standing Committees—Operations and Administration, Audit, Executive, and Compensation—that periodically advise the AUI Board and President on the results of their NRAO reviews. The AUI Board had a standing Strategic Planning Committee, but that was phased out several years ago. There also is an AUI Visiting Committee that meets every 2 years to assess NRAO's contributions to astronomical sciences. AUI must submit to NSF its own annual management report on its oversight of NRAO operations.

- **Reviews of Operational Activities and Audits:** In addition to the AUI Standing Committees, NSF's LFO performs a business systems review (BSR) once during the 5-year term of the cooperative agreement (usually about midway through that term). The BSR includes reviews of safety, security, health, human resources systems, financial systems, and other internal NRAO systems for managing standard operational risks.

- **Evaluation Processes:** The NRAO Director meets frequently and informally with the AUI President to review NRAO operational issues and has a weekly teleconference with the AST program officer and other NSF staff to discuss NRAO program activity and any issues. In addition, there are formal quarterly reviews with NSF and AUI; AUI Board meetings 3 times per year; AUI Visiting Committee reviews every 2 years; the NSF LFO's BSR review once every 5 years; and the NSF's comprehensive review as the cooperative agreement nears its expiration.

- **Feedback/Impact of Evaluations:** Quarterly and annual review meetings provide direct feedback on NRAO performance. The informal teleconferences and meetings with the AUI President provide the NRAO Director with immediate feedback on any issues that may have emerged. NSF also shares the program review committee's assessment of NRAO's annual report with AUI.

- **Fee Determination:** There is no award fee. There also is no contract term award incentive. The nominal fixed management fee is negotiated annually. The fee is used by NRAO for a number of activities not normally covered by contract overhead, such as diversity and scholarship programs; community relations; and education programs.

Oversight Procedures:

- **Site Office:** Not applicable

- **Other Entities:** The NRAO Director has appointed a User Group and other external committees to provide him guidance and feedback on NRAO's programmatic and operational progress. These NRAO committees are in addition to the AUI Board of Trustees' Standing Committees and Visiting Committee and the NSF's Program Review Panel.

- **Systems:** NRAO submits quarterly and annual progress reports electronically to NSF. AUI also submits its annual management report to NSF electronically.

Limitations/Issues: Sponsoring agency and NRAO staff generally are satisfied with the review process. They acknowledge that the process is still evolving, and they seek to focus the current quarterly reports more on key issues. AUI management remains very satisfied with their oversight and the close working relations with NRAO. AUI also noted that the NSF oversight role has been evolving. When the current cooperative agreement expires, NSF may decide to re-compete the NRAO contract for the first time since AUI began managing NRAO in 1957. Now that ALMA construction is virtually completed and the site

is operational, NSF will have to decide whether the ALMA facility will be included in the NRAO cooperative agreement or be managed under a separate agreement.

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APPENDIX D: EVALUATION OF THE NATIONAL LABORATORIES

This appendix provides more detailed information about the evaluation of the labs, which is discussed in Chapter 5 of the report body. The information addresses the following questions:

- D-1: What is measured?
- D-2: What is the process for evaluating the labs?
- D-3: How are evaluation scores developed?
- D-4: How are award fee and award term eligibility determined?
- D-5: How is the Savannah River National Lab evaluated?

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WHAT IS MEASURED?

All of the DOE lab evaluations include program/mission performance, operational performance, and leadership, though there are significant differences in the extent of coverage, and in how performance in each area affects the overall evaluation score and fee determination. There are also significant differences in the specificity of objectives and expectations set in the evaluations. However, even those with the most specific objectives include a significant element of subjective assessments.

- Office of Science (SC) evaluation plans are the same for all of its 10 labs, focus on outcomes, and are subjective by design. SC has provided extensive guidance on the intent of the criteria and factors to consider in assessing them.
- National Nuclear Security Administration (NNSA) evaluation plans were different for each lab, focused on many specific objectives, while including subjective elements as well. General guidance was provided about content and intent of the criteria. In 2013, NNSA began using a new model, "strategic" evaluation, which was, like SC, subjective by design. Guidance had not yet been developed.
- Nuclear Energy (NE) and Energy Efficiency and Renewable Energy (EERE) used varying degrees of specific and subjective objectives, and different levels of guidance. Only NE did not include a significant focus on operational performance in the evaluation, using other contract provisions to hold the lab accountable in this area.

OFFICE OF SCIENCE

The Performance Evaluation and Measurement Plan (PEMP) includes 8 broad goals and specific objectives within each goal, which are consistent across the labs. As shown in Table D-1.1 below, there are 3 goal categories: Science, Leadership, and Maintenance and Operations.

Table D-1.1 Office of Science PEMP Goals for Lab Evaluations

Science/Mission	Leadership	Maintenance & Operations
1. Provide for Efficient and Effective Mission Accomplishment	4. Provide Sound and Competent Leadership and Stewardship of the Laboratory	5. Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection
2. Provide for Efficient and Effective Design, Fabrication, Construction, and Operations of Research Facilities		6. Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)
3. Provide Effective and Efficient Science and Technology Program Management		7. Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs
		8. Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management and Emergency Management Systems

SC-Wide Guidance

In FY 2011, there were a total of 26 objectives across the 8 goals.[2] All of the objectives are fairly broad statements of expectations. For example, objective 1 for goal 1 is: "Provide science and technology results with meaningful impact on the field." Likewise, 1 objective for goal 6 is: "Provide an efficient, effective, and responsive acquisition management system."

The guidance for determining the numerical and grade scores, again the same for all labs, provides additional insight into the scope and intent of each objective. For each objective, SC lists "assessment elements" that should be considered. For goal 1, for example, 2 elements are the lab's performance with respect to (1) research plans and (2) peer review. SC also provides "a sample of factors to be considered" for each objective. For example, some of those listed for goal 1 include the impact of results on SC or other customer missions, delivery on proposed research plans, and significant awards or invited talks. Evaluators use this general guidance to assess performance, with the detailed deliverables and milestones specified elsewhere, such as in work authorizations. No specific expectations, for example, for the number of milestones to be met or which deliverables are most important, are set (with the exception of "notable outcomes" discussed below).

Lab-Unique Metrics

Since 2010, SC has been including "notable outcomes," unique to each lab, for some or all of the objectives in the PEMP. These notable outcomes can be fairly specific, for example, "[e]nsure the successful implementation of the Laboratory Compensation System action plan milestones by the mutually agreed upon date;" or fairly broad, for example, "[d]emonstrate progress in broadening the customer base in areas of strategic importance to the lab." According to the guidance, "[n]otable outcomes are intended to focus the laboratory leadership team on the specific items that the members of the SC leadership team believe are the most important initiatives and/or highest risk issues the laboratory must address in the coming year." These criteria are evaluated on a pass/fail basis. For 2012, the highest number of notable outcomes for an individual lab was 18, covering all 8 goals; the lowest was 6, covering 5 of the 8 goals.

NATIONAL NUCLEAR SECURITY ADMINISTRATION

Before FY 2013

Unlike SC, the Performance Evaluation Plans (PEPs) that NNSA used to assess lab performance were different for each lab; they used somewhat different terminology as well as lab-unique metrics. Many of the metrics included in the PEPs were related to specific milestones or deliverables. NNSA guidance specified 3 performance categories that were to be covered in the evaluations: programs; operations/mission support; and business and institutional management. Performance objectives and measures were organized under these 3 categories and included both subjectively assessed and objectively assessed elements. There also was 1 set of objectives common to multiple labs and facilities—multi-site initiatives. NNSA headquarters developed

[2] In FY 2012, the goals did not change, but there were 23 objectives, rather than 26, across the goals.

this set of objectives to ensure integration and cooperation across the NNSA complex. This set of objectives is used as a standard across one or more of the NNSA labs and facilities to measure complex-wide goals. Either all of the labs/facilities achieved each objective (and got the award—at-risk—fee associated with it) or none did.

Annually, NNSA issued weights for the performance categories, that is, the portion of the overall evaluation and fee allocated to each category. In 2011, NNSA specified the allocation of maximum available at-risk fee among the performance categories (programs 35%, operations 35%, business/management 20%, and multi-site 10%). The FY 2012 guidance set minimums for allocations (programs 30%, operations 10%, business 10%) allowing the site office (with input from other key stakeholders) to set a final allocation. The guidance also lists performance areas to be included in each of the 3 categories. Table D-1.2 below is from NNSA's FY 2012 guidance.

Table D-1.2: Key Content of NNSA Performance Categories

	Program	Operations	Business/IM
Mission Activities to directly accomplish the funding Program's mission deliverables			
NNSA Deliverables (principally NA-10 & NA-20 products)	X		
Other DOE Funded Mission Deliverables (EM,* FE,* SC, IN,* EERE, NE, etc.)	X		
Mission Support Activities to permit the portfolio of Programs at the site or to address capability and/or capacity			
Safeguards & Security (Cyber, Physical, Property)		X	
Construction or Project Management		X	
Facilities, Utilities & Operational Support		X	
ES&H* (site support & regulatory)		X	
Quality Assurance (product)	X		
Quality Assurance (institutional)		X	
General Business functions or Institutional Management of the site, its Programs, and resources			
Resource Management			X
Business & Accounting			X
Institutional Management			X
Human Resources			X
Information Technology Management			X
Legal, Public Affairs, Community Relations			X
Contractor Assurance			X
Efficiency & Effectiveness			X
Procurement & Purchasing			X
Work for Others (WFO)			X

EM: Office of Environmental Management
FE: Office of Fossil Energy
IN: Office of Indian Energy Policy and Programs
ES&H: environment, safety, and health

Performance measures are established for each objective to describe a particular value or characteristic to measure input, output, outcome, efficiency, or effectiveness. Performance targets establish a target level of achievement for the measures. DOE establishes unique objectives, measures, and targets for each lab, with input from the contractors.

Performance is categorized as essential or stretch. Essential performance is the minimum performance required to accomplish basic mission in the 3 categories (mission, operations, and business). Stretch performance targets go beyond the minimum essential; they present incentivized opportunities for the contractor to meet stretch goals and objectives and thus earn performance award fees. (See more on fee determinations in Appendix D-4). FY 2011 guidance also set a fee allocation between essential (60%) and stretch (30%) and multi-site (10%) objectives. The FY 2012 guidance made this allocation the responsibility of the site office manager and the PEP preparation process. The essential work has priority. Regardless of performance on stretch measures, to be eligible to earn "stretch fee," the contractor's

performance on essential objectives had to meet "certain expectations." Expectations established in FY 2011 included achieving at least a "very good" in the subjective evaluation and 80% of objective measures for each performance category.

Generally, the NNSA lab PEPs included significant detail. In FY 2011, the Los Alamos National Lab (LANL) was evaluated on 17 objectives (across the 3 performance categories and multi-site), which included 76 measures and sub-measures and 150 specific targets (milestones and deliverables). The Lawrence Livermore National Lab's (LLNL's) PEP had 11 objectives (across the performance categories and multi-site), 43 measures, and 22 more specific targets, as seen in the example in Table D-1.3.

Table D-1.3: Example of Measures and Targets from LLNL's FY 2011 PEP

Metric	Type
1 Complete essential activities for core weapons program requirements	Objective
1.1 Management of defense program work	Measure (essential)
1.2 Management of critical capabilities, skills, and facilities supporting nuclear weapons work	Measure (essential)
2 Strengthen the foundation of deterrence through stockpile science, technology, and engineering	Objective
2.1 Resolve Weapons Physics and Engineering Challenges	Measure (no designation)
2.1.1 Develop and demonstrate HED* platform in support of longer-term predictive capability framework objectives	Target (stretch)
2.1.2 Use Boost Validation Suite (with initial metrics) for PCF* 2012 Pegpost	Target (stretch)
2.1.3 Demonstrate improvement in the physics and geometric fidelity of the ASC* Code System through a simulation of a UGT*	Target (stretch)
2.1.4 Effectively collaborate with NSTec* to bring JASPER* back on line meeting the cost and schedule milestones and achieve 3 Plutonium shots	Target (stretch)

HED = high energy density; PCF = predictive capability framework; ASC = advanced simulation and computing; UGT = underground nuclear testing; NSTec = National Securities Technologies, LLC (manages Nevada National Security Site); JASPER = Joint Actinide Shock Physics Experimental Research.

Sandia pilot tested NNSA's strategic PEP in FY 2011, but there still were a high number of metrics. Its PEP included 6 broad performance objectives in two categories—mission and mission support, with 47 measures and 81 sub-measures. However, measures were most often stated as expected outcomes for the lab, such as "demonstrate continuous improvement in" a given program or area of effort; and targets most often related to evidence of the contractor's

ability to assess performance, identify needed changes, and accomplish improvements, rather than specific outputs. The PEP states that it:

> …evaluates and promotes a new Governance and Oversight framework based on prudent management of risk, trust, and accountability.…Accordingly, the model for this PEP is to rely on the contractor's leadership in utilizing appropriate standards based on consideration of risk, its management and assurance systems and related measures, metrics and evidence in assessing its performance.…The PEP change is driven by a need to evaluate Sandia's ability to sustain and improve mission performance….

These concepts guide the strategic PEP process adopted NNSA-wide in FY 2013, described in the following section.

NNSA in FY 2013

During the past year, NNSA has been working on a new evaluation system anchored on a new "strategic PEP," modeled to some degree on the SC model. These strategic PEPs were included in contracts for the NNSA labs and other facilities for FY 2013.
The new PEP mirrors the SC PEMP in that the objectives and "contributing factors" are the same for all labs and facilities. NNSA is using 5 major performance objectives, focused on the following areas:

1. nuclear weapons mission
2. broader national security mission
3. science, technology, and engineering mission
4. security, infrastructure, environmental stewardship, and institutional management
5. contractor leadership

Weights are established for each objective for each lab.

Each of the 5 objectives has "contributing factors" listed. There were 34 factors listed across the 5 objectives. For example, the objective for the nuclear weapons mission was stated as:

> Successfully execute nuclear Weapons mission work in accordance with NNSA Priorities, Program Control Document (PCD) and Deliverables, and Program Execution Plans. Integrate across the site, while maintaining an NNSA enterprise-wide focus, to achieve greater impact on a focused set of strategic national security priorities.

Under that objective there are 6 contributing factors, 2 of which are:

- Accomplish work within the budget profile, scope, cost, schedule, and risk negotiated with program sponsors and partners, achieving the expected level of quality
- Sustain and strengthen unique science and engineering capabilities, facilities, and essential skills to ensure current and future Nuclear Weapons mission requirements will be met

The new PEP also has "site-specific outcomes" (mirroring SC's notable outcomes) for some or all of the 5 performance objective categories. The outcomes represent the things most important for each NNSA site to accomplish in that year. Any time a facility fails to meet a site-specific outcome, the contractor is limited in the amount of fee it can earn for the applicable major performance objective—limited to no more than 90%. In FY 2013, there were a total of 34 site-specific outcomes spread across the 3 NNSA labs.

NNSA no longer uses "stretch" objectives or targets. Officials stated that the contractors know what "meets expectations" means and will know what exceeding them means, as defined in the Federal Acquisition Regulation (see Table D-4.2). The strategic PEP is totally subjective, with the exception of the site-specific outcomes. Multi-site objectives are no longer included. Instead, 1 contributing factor under the leadership objective (5 above) relates to the extent to which the lab leadership works "selflessly" within NNSA and the DOE complex to maximize program outputs at the best value to the government.

NUCLEAR ENERGY/IDAHO NATIONAL LAB

NE's 2011 evaluation of INL covers 6 broad "focus areas," each with 1 or more "results" statements (objectives); in 2011, there were 13 results statements in total. NE specifies weights for each focus area and results statement. These are used in calculating the evaluation score and fee. The FY 2011 focus area weights are shown in Table D-1.4 below.

Table D-1.4: Focus Area Weights for INL's FY 2011 Evaluation

Focus Area	Weight
Deliver Transformational Research and Development (R&D)	5%
Deliver R&D Program Commitments	35%
Develop Capabilities for the Future	20%
Establish Broader, More Effective Collaborations	10%
Safety, Operations & Stewardship	25%
Leadership of the INL	5%

One or more "measures" are specified for each result statement. The measures are a mix of specific milestone/deliverable measures and more subjective measures. Overall in 2011, there were over 70 individual measures; about half were objective (complete a plan, hold a meeting, etc.) and half subjective (increase, demonstrate, etc.). However, 2 of the objective measures dealt with "meeting milestones," and officials said there were hundreds of milestones included in those measures.

The INL PEMP does not categorize focus areas or objectives into broader performance categories (such as SC's science and maintenance and operations categories). Officials said that the entire PEMP focuses on program performance; though some specific measures may be more operational in nature. The intent is to focus the evaluation on program aspects of performance

while holding the lab accountable for operational performance. Sound operation is expected under the contract and the contractor is held accountable through other contract provisions.

ENERGY EFFICIENCY AND RENEWABLE ENERGY/NATIONAL RENEWABLE ENERGY LAB

NREL's PEMP categorizes 9 goals into 3 areas: 4 mission, 4 operations, and 1 construction. Weights are established for each goal and for each objective within a goal. In 2012, there were 23 objectives across the 9 goals.

Targets are established for each objective. The targets in the PEMP include selected milestones/deliverables taken from annual program operating plans. The targets are set forth in 2 categories, 1 that would "meet expectations" and another that would merit a rating of "excellent." The latter targets are considered "stretch" goals. Targets are not weighted; overall objective scores are determined subjectively. In 2012, there are 126 "meets expectations" targets and 74 "excellent" targets. Table D-1.5 shows the weights assigned to the 9 goals in NREL's 2012 PEMP.

Table D-1.5: Goal Weights for NREL's FY 2012 Evaluation

Objective	Weight
Program	
1.0 Advancing Science and Technology	55%
2.0 Leadership and Creating Lasting National Value	20%
3.0 Credible and Objective Analysis and Decision Support	15%
4.0 Accelerating Commercialization and Increasing Deployment	10%
Operations	
5.0 Environment, Safety, and Health Management	30%
6.0 Business Operations	25%
7.0 Infrastructure Development and Site Operations	25%
8.0 Security and Emergency Management	20%
Construction	
9.0 Major Construction	100%

Table D-1.6 below presents summary information concerning the sponsoring organizations' approach to lab evaluation.

Table D-1.6: Comparison of Content and Approach of Sponsoring Organizations' Lab Evaluations

Office of Science	NNSA (before FY 2013)	NNSA (FY 2013)	Nuclear Energy/INL	EERE/NREL
Level of Detail				
• PEMP sets broad expectations; does not include specific deliverables • Established objectives and measures are the same for all SC labs; weights can vary among labs • Since 2010, notable outcomes establish a few priorities; in 2012, they range from 6 to 18 per lab • Beyond notable outcomes, expectations established through work authorizations and other documents	• Each PEP establishes specific priorities through lab-unique objectives, measures, and targets • Content of each lab's plan very unique; number of objectives and measures unique to each lab • PEP specifies many expectations and establishes priorities (e.g., LLNL: 2011 = 11 strategic objectives, 41 measures and 80 targets)	• PEP sets broad expectations; does not include specific deliverables • Established objectives and "contributing factors" are the same for all labs • "Site-specific outcomes" establish a few priorities for each lab; total of 34 for the 3 labs • Beyond site specific outcomes, expectations established through work authorizations and other documents	• PEMP specifies many expectations; establishes specific priorities • PEMP establishes 6 focus areas, 13 results (objectives); and over 70 measures • One measure = Meet all milestones (could be 100s)	• PEMP specifies many specific expectations • 9 goals , 23 objectives and 126 targets (at meet expectation level)
Weighting Performance Measures				
• Scores developed for program objectives, operational objectives, and for leadership. Weights for these categories set by HQ* • Weights among goals/objectives within categories set by each program for each lab (and SO* for operations) • Program office input weights by relative funding level and relative importance of the goal among programs	• HQ establishes weights for major performance categories: (Program – Operations – Business – Multi-site) • Weights of objectives within categories determined by SOM* during development of PEP, with input from HQ, SO, and lab	• Only objectives are specifically weighted • Weights vary by lab • Weights decided during iterative process for developing PEP (SO, HQ inputs)	• SOM, in consultation with HQ and lab, sets weights among the 6 focus areas and among objectives within focus areas • Program office input weighted subjectively	• Scores developed for program goals for 3 categories: program, operations, and construction • EERE establishes weights for goals and for objectives within goals

Continued

Office of Science	NNSA (before FY 2013)	NNSA (FY 2013)	Nuclear Energy/INL	EERE/NREL
Subjective vs. Objective Measures[3]				
• Subjective by design • "Wary of task-specific metrics" for science research	• NNSA stated objective: preserve FDO* discretion: encourage subjectivity • Each PEP includes substantial subjective elements in addition to detailed measures • Objectives may have both objective and subjective measures, but stretch measures—performance-based incentive measures—are pass/fail	• Subjective by design • FDO discretion maintained	• Many objective measures • Some objectives are a mix of subjective and objective measures; others only 1 or the other	• Most targets are objective measures • Some objectives have both subjective and objective targets

*SO = site office; SOM = site office manager; HQ = headquarters; FDO = fee determining official

[3] Objective measures and targets are sometimes quantitative, but in many cases relate to deliverables, such as performance of certain tests or completion of specific documents. Decisions about whether these criteria are met may involve subjective assessments of adequacy of the deliverable.

WHAT IS THE PROCESS FOR EVALUATING THE LABS?

In all cases, mission/program performance is evaluated by DOE program or technical staff responsible for program success; in most cases those staff are in the headquarters office. Site office staff evaluate operational performance. There are differences among the sponsoring organizations in terms of the headquarters and site office roles and the approaches to achieving consistency among the organization's evaluators. Most of the laboratory contracts require the labs to submit a self-assessment. The role these assessments play in the evaluation differs among organizations.

In all cases, the evaluators can use information from a wide variety of sources to assess lab performance, including, for example, the various program reviews conducted by program offices; site office "operational awareness" activities; operational reviews by the site office or headquarters functional offices; external reviews by the Government Accountability Office, the Inspector General, and others; peer reviews; parent organization reviews; and "for cause" reviews.

OFFICE OF SCIENCE

The Director, SC, has final approval of the PEMP content, the evaluations, and, ultimately, the final score and incentives awarded. Both headquarters program offices and site offices have roles in the process, from development of the PEMP to the final evaluation report and fee recommendation. The Office of Laboratory Policy and Evaluation in SC's Office of the Deputy Director for Field Operations oversees the overall lab evaluation process.

The goals and objectives are predetermined in the SC evaluation process, as described in Appendix D-1 above. At the beginning of each year, each of the program offices funding lab work[4] weights the various goals and objectives according to their importance to the individual program. The site office weights the operational goals and objectives. The program offices, site offices, and labs propose notable outcomes, which are reviewed by headquarters and field officials, and finally approved by the Director, SC.

Program offices monitor lab performance throughout the year against the PEMP criteria; site offices monitor against operational criteria and provide day-to-day oversight of lab operations. A mid-year assessment is provided to each lab.

Preparation of the annual end–of-year evaluation is coordinated by the site office. The program offices (and other customers) and the Deputy Director for Science Programs are the key evaluators for the science goals (1-3). The site office managers and the Deputy Director for Field Operations are key evaluators for the maintenance and operations goals (5-8). The program offices, site offices, and both of the Deputies provide input for goal 4, leadership. The Director, SC, approves the final evaluations and, as discussed in Appendix D-4, the fees awarded. SC program offices do not consider the lab's self-assessment, but some site offices do.

[4] SC policy states that any program office providing $5 million or 1% of the lab's budget should have input into the PEMP and rating, and makes provision for others to have input if deemed appropriate.

Once programs and site offices have developed proposed evaluation ratings, there is a "normalization" process in which proposed evaluations are reviewed and discussed in a meeting with all of the program offices, the site office managers, and other headquarters program and functional office heads. According to SC's evaluation guidance, the purpose of the meeting is "to assist in assuring the techniques and methodologies for determining contractor performance scores/grades are consistent across the SC complex." There is a separate meeting for the program goals, the operational goals, and the leadership goal. The officials review proposed scores/grades and "help to normalize the methodologies being utilized in reaching appropriate scores/grades based on performance results." Multiple program inputs are combined into one using a formula, as discussed in Appendix D-3. Final evaluations are discussed with the lab director in meetings with appropriate headquarters officials and the site office manager.

NATIONAL NUCLEAR SECURITY ADMINISTRATION

The Deputy Administrator for NNSA[5] has final approval of the PEP content, the evaluations, and, ultimately, the final score and incentives awarded. Like SC, headquarters program offices and site offices have roles in the process, from development of the PEP to the final evaluation report and fee recommendation. Prior to 2012, the Office of Defense Programs oversaw the overall lab evaluation process. In April, 2012, the Office of Infrastructure and Operations was created; the office's functions include oversight of the lab evaluation process.

There are quarterly interim reviews attended by program, site, and lab officials, and a mid-year performance assessment in which the lab's self-assessment against the PEP criteria is compared to NNSA's assessment.

The site offices have a greater role in the development of the PEP and the lab evaluations than in SC. Each site office works with headquarters program offices to combine various program office inputs to establish the PEP programmatic goals and objectives and to evaluate programmatic performance; program inputs are not weighted as they are in SC. Site offices establish operational goals and objectives for the PEP and evaluate the lab's operational performance. Leadership is evaluated by the site office, with input from program offices, as part of the business operations performance category. NNSA labs are required to develop a self-assessment and to present it to NNSA officials as part of the evaluation process. These extensive self-assessments are a key information source for the evaluations, and are validated by NNSA as part of the evaluation process.

As part of the evaluation process, NNSA headquarters management and program officials meet with the site office managers to discuss all proposed evaluations (and fees and other incentives) to ensure fairness and balance across the NNSA enterprise. The site office manager incorporates any changes deemed appropriate based on this meeting into the final evaluation and forwards it for the Deputy's signature.

NNSA is still developing the procedural guidance for the new strategic PEP process.

[5] Delegated authority from the Administrator, NNSA.

NUCLEAR ENERGY/IDAHO NATIONAL LAB

Unlike SC and NNSA, in NE, the site office manager for INL has final approval authority for the PEMP, the evaluation, and any incentive awards. The site office, including the lab evaluation process, is under the purview of the Assistant Deputy Assistant Secretary for Nuclear Facility Operations/Chief Operating Officer.

There is significant programmatic expertise in the site office overseeing INL, unlike the SC and NNSA site offices. Headquarters program officials focus more on policy, planning, budgeting, and goal-setting. Site office program technical monitors take the lead to develop the PEMP and evaluate the lab's performance. Site office officials subjectively incorporate input from multiple program customers in developing the goal and objective weights and assessing lab performance. As discussed in Appendix D-1, the INL evaluation focuses on programmatic and leadership performance, though some operational elements tied directly to programs are included in the objectives.

The lab self-assessment plays heavily in the evaluation process. The lab and the site office (with headquarters input) prepare an assessment against the PEMP criteria monthly. Significant differences in assessments are addressed each month, providing the basis for the annual evaluation.

The site office prepares the draft year-end evaluation, combining input from multiple customers and considering the lab self-assessment. Site office officials review the evaluations prepared by individual technical monitors to ensure the evaluation is adequately supported by the narrative, including correct interpretation of the evaluation criteria. NE management is briefed on the evaluation and any concerns are addressed. The site office manager prepares the final evaluation report and briefs lab officials.

ENERGY EFFFICIENCY AND RENEWABLE ENERGY/NATIONAL RENEWABLE ENERGY LAB

In EERE, the Golden Field Office[6] has the lead on the lab's evaluation. However, headquarters program offices have primary responsibility for setting expectations, monitoring progress, and evaluating programmatic performance. As with all the other sponsoring organizations, the field office has responsibility for day-to-day oversight and evaluation of the operations elements of lab performance. The field office contracting officer is the fee determining official, with final approval of the evaluation and incentives awarded.

The contractor is expected to bring any problems to EERE's attention as they occur throughout the year. EERE and lab officials have a mid-year meeting in which EERE provides performance feedback.

The lab prepares a year-end self-assessment and briefs EERE. The field office prepares a draft evaluation, with input from EERE headquarters and other program customers. The draft is reviewed in a meeting of EERE management, program heads, field office managers, and lab

[6] EERE does not use the term "site office." The Golden Field Office is responsible for NREL oversight.

representatives. One goal of this meeting is to test the consistency of the various evaluators' interpretation of criteria and to ensure that guidance has been followed.

Lab officials then exit the meeting and EERE officials agree on the final evaluation—with headquarters program officials evaluating the programmatic performance and field office officials determining the operational evaluation score. The field office manager develops the final report. Multiple program inputs are weighted based on level of program funding, as discussed in Appendix D-3. The draft is reviewed by lab officials. Any major issues are then discussed in an iterative process; if changes are deemed appropriate, they are again reviewed by EERE management.

SUMMARY

Table D-2.1 below, summarizes key responsibilities in the sponsoring organizations for lab evaluations. Following that, Table D-2.2 summarizes the key process steps in the sponsoring organizations' evaluation processes.

Table D-2.1: Basic Responsibilities for Lab Evaluation

	Office of Science	NNSA[7]	Nuclear Energy	EERE
Process Owner	Director, SC, owns content of PEMPs and approves PEMPs, evaluations, and incentives awarded; leads lab briefing re final evaluation and award.	Deputy NNSA Administrator has final authority for approval of PEMP, evaluation, and fee. (Administrator NNSA is the fee determining official; delegated to Deputy.)	SOM has final authority for approval of PEMP, annual evaluation, and fee; leads lab briefing re final evaluation and award.	Field office manager has the lead for the evaluation process; contracting officer in field office is fee determining official.
Programmatic Performance	HQ program offices set goals and monitor lab program performance; set PEMP priorities; and provide evaluations for program performance.	HQ program offices set goals and monitor lab program performance; set PEMP priorities; and provide evaluations for program performance.	HQ program offices lead planning, budgeting, and goal setting.	HQ program offices set goals and monitor lab program performance; set PEMP priorities; and provide evaluations for program performance.
Operational Performance	SOM does day-to-day oversight of labs, sets PEMP operational priorities, and evaluates operations.	SOM does day-to-day oversight of labs, and develops PEMP, sets operational priorities, and evaluates operations; leads lab briefing re final evaluation and award.	SOM does day-to-day oversight of labs; develops PEMP and evaluation with input from HQ program offices.	SOM does day-to-day oversight of labs; develops PEMP and evaluation with input from HQ program offices.
Reporting Structure	SOM reports to HQ SC Office of Field Operations.	SOM reports to: BEFORE 2013: Office for Defense Programs NOW: Office of Infrastructure and Operations	SOM reports to HQ Nuclear Facility Operations/Chief Operating Officer.	SOM reports to HQ Office of Business Operations.
Lab Role	Lab submits proposed "notable outcomes," otherwise informally involved; may do self-assessments considered by some SOs.	Lab informally involved in PEP prep; prepares self-assessment as part of lab evaluation process.	Lab involved in "iterative" process to develop PEMP, has formal review, and approves PEMP as contract mod; lab provides self-assessment as part of evaluation process.	Lab informally involved in PEMP preparation; prepares self-assessment as part of lab evaluation process.

[7] Procedures for the strategic PEP process had not been completed at the time of the Academy's work. The process shown here was still in effect. It was not clear what, if any, process changes would be implemented.

Table D-2.2: Basic Sponsoring Organization Evaluation Processes

	OFFICE OF SCIENCE	NNSA	NUCLEAR ENERGY	EERE/NREL
Before Annual Assessment	• Periodic program reviews • Mid-year evaluations of operations are prepared for each lab	• Periodic program reviews with lab and program representatives • SOM periodically briefs program offices and management on lab performance • Mid-year performance assessment meeting compares lab self-assessment with NNSA's assessment	• Monthly assessments are done by SO and lab against PEMP; significant differences are discussed.	• Contractor is expected to bring any problems to EERE's attention as they occur—weekly/bi-weekly and highlights reports • Informal mid-year meeting to review performance and receive EERE feedback
Key Steps	• Input for evaluation is obtained: >Each program sets weights for program goals and objectives; and evaluates vs. objectives >SO sets goals for operational goals and objectives; and evaluates against operational objectives >Director, SC and 2 Deputies evaluate Leadership objective (with input from program offices and SO) • For annual evaluation, HQ leads "normalization meetings" • SOM prepares final evaluation; multiple program inputs are consolidated into one via formula based on proportional funding to each lab and programs' weights for each goal • Director, SC, leads debrief of contractor re final evaluation	• Lab prepares and presents self-assessment to NNSA management • Site offices, with input from program customers and HQ functional offices, validates contractor performance • SO develops draft evaluation, integrating HQ program input where multiple programs are involved, and presents it to NNSA's management • NNSA management and program officials meet concurrently with all SOMs to discuss all proposed evaluations and incentive award decisions to ensure fairness and balance across enterprise • SOM prepares final evaluation for FDO approval • SOM briefs contractor's Board on evaluation results	• SO technical monitors take lead, in consultation with HQ program offices, in establishing PEMP and on final assessment • Lab prepares self-assessment • Using judgment, SO consolidates input from multiple programs, and lab self-assessment as appropriate, and develops draft evaluation • SOM briefs NE HQ officials on evaluation; any concerns are addressed • SOM signs final evaluation and fee determination letter and briefs lab officials	• Lab prepares year-end self-assessment; meets with EERE to summarize self-assessment. • Field office prepares draft evaluation • EERE management, program heads, field office manager, and lab representatives meet to discuss draft rating • Lab representatives leave meeting and agreement is reached on final evaluation (headquarters representatives evaluate program/mission goals; field office evaluates operational and construction goals • Field office manager develops final evaluation draft; delivers to lab officials • Lab can raise factual issues; any recommendations for change are vetted with program/management officials; and changes are then reviewed by EERE management

	OFFICE OF SCIENCE	NNSA	NUCLEAR ENERGY	EERE/NREL
Ensuring Consistency	HQ officials conduct normalization meeting, with HQ program officials and with functional managers and SOMs, to discuss draft evaluations to ensure consistency in interpretation of criteria	NNSA management reviews all evaluations in meeting with all program managers and SOMs to ensure consistency	SO officials review individual program evaluations to ensure the grade is adequately supported by the narrative, including interpretation of evaluation guidance	One goal of the meeting of EERE management, program heads, site office managers and lab representatives, is to test the consistency of interpretation of evaluation criteria among evaluators and to ensure evaluations follow guidance
Final Approval	• HQ owns process; oversees and coordinates among programs/site offices; • Director, SC approves evaluation, award fee, and award term	Administrator, NNSA is FDO, delegated to Deputy. Deputy approves final evaluation, fee award, and award term	SOM is FDO; approves evaluation and award fee	Field office contracting officer is FDO; signs final evaluation and award letter

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HOW ARE EVALUATION SCORES DEVELOPED?

All of the sponsoring organizations assign numerical and letter/adjectival ratings in accordance with the objectives discussed in Appendix D-1. NNSA's scale is more limited than that used by the other sponsoring organizations; NNSA has a 5-point scale while the others have more gradations.

In SC and EERE, multiple customer evaluations are combined into 1 using formulas that weight the inputs using the ratio of each customer's funding at the lab. In NNSA and NE, the site office managers develop the single evaluation from the multiple customer inputs subjectively.

As will be discussed in Appendix D-4, all of the sponsoring organizations use the evaluation scores as the primary basis for determining award fees and award term eligibility. In some cases, objective and goal evaluations are summarized at a higher level for fee calculation, in others they are not.

OFFICE OF SCIENCE

Each objective is given a numerical score (4.3 - 0) and a corresponding letter grade (A+ - F). The guidance defines the performance level for each of the numerical and letter scores. Unique definitions of the letter grades are provided for each of the program and leadership objectives and for the operations objectives overall. These definitions help define what is considered in each area. The distinctions are usually in terms of the extent to which performance met or exceeded expectations (exceeded, notably exceeded, significantly exceeded, etc.) or the kinds of conditions that warrant the several grades below "meets expectations." Generally, a B+ is awarded for meeting expectations. Notable outcomes are not assigned grades, but instead are either met or not met. A lab cannot attain a B+ or better for an objective for which a notable outcome was not met.[8]

Table D-3.1: Corresponding Letter and Numerical Scores for Science Lab Evaluations

Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Numerical Score Range	4.3 to 4.1	4. 0 to 3.8	3.7 to 3.5	3.4 to 3.1	3.0 to 2.8	2.7 to 2.5	2.4 to 2.1	2.0 to 1.8	1.7 to 1.1	1.0 to 0.8	0.7 to 0

Each program provides a numerical and letter grade for each program objective. Programs provide evaluation scores and supporting narrative by entering them into an electronic system. Each program's scores for individual objectives are rolled up into a score for each of the 3 science/mission goals for each program office. This calculation considers each program's weights for the objectives within each goal. See Table D-3.2 below.

[8] Where multiple programs are evaluating an objective, the program that included the notable outcome cannot award above a B if the notable outcome is not met. However, depending on the program's weight in the overall goal, a B+ could still be obtained for the objective as a whole.

Table D-3.2: Example: Determining Lab's Science Goal Scores for Each Program Office [a]

SC Office	Goal 1 Objective	Letter	Score	Weight [b]	Weighted Objective Score	Goal Score
Program Office A	1.1	C+	2.2	20%	0.44	
	1.2	A	3.8	30%	1.14	
	1.3	A-	3.6	50%	1.80	
	Program Office A goal score					3.38 B+
Program Office B	1.1	A	3.8	40%	1.52	
	1.2	B+	3.7	30%	1.11	
	1.3	B+	3.6	30%	1.08	
	Program Office B Goal Score					3.71 A-

[a] This example assumes 2 offices (programs) account for 100% of the lab's funding and that goal 1 has 3 objectives.
[b] Importance of each objective within goal determined by each program office.

For each of the 3 science/mission goals, the multiple program scores are rolled into one lab goal score, based on a calculation that considers both the programs' ratio of funding and the relative importance each assigns to the goal.

A similar process is followed for the maintenance and operations goals (5-8), but the site office manager determines weights for objectives within the goals and no program weights are involved. The leadership objectives and goal (goal 4) are evaluated by SC leadership, with input from the program and site offices.

There is no overall summary score for the lab. Instead, each lab's individual goal scores are rolled up into 2 summary scores, one for the science/mission goals and one for the maintenance and operations goals. The Leadership score is part of the calculation for both of these summary scores, as shown below in Table D-3.3.

Table D-3.3: Example: Inclusion of Leadership Score in SC Evaluations

	Numerical Score	Weight	Final weighted Score
Initial Science Score	3.7	75%	2.77
Leadership Score	3.6	25%	0.9
Final Science Score			3.86
Initial Maintenance & Operations Score	3.4	75%	2.55
Leadership Score	3.6	25%	0.9
Final Maintenance & Operations Score			3.45

These 2 summary scores are used to calculate the portion of the available incentive fee to be awarded, as discussed in Appendix D-4.

NATIONAL NUCLEAR SECURITY ADMINISTRATION

NNSA Before 2013

NNSA developed scores for each objective and summary scores for each of the 3 performance categories (program, operations, and business), as well as an assessment of whether the individual multi-site objectives were or were not met. NNSA performance evaluation plans included both objective and subjective measures. Objective measures were considered pass/fail. The subjective measures for all performance categories were assessed using the 5-point adjective scale established in the Federal Acquisition Regulation: excellent, very good, good, satisfactory, and unsatisfactory. Each of the adjectives is defined and associated with a percentage range of fee that could be awarded, also established in the regulation. (See Table D-4.2 in Appendix D-4.)

The 2011 guidance stated that at least 50% of the at-risk fee will be evaluated subjectively, and higher percentages were encouraged to preserve the fee determining official's discretion. (In 2012, a minimum of 40% was set.) As discussed in Appendix D-1, allocations were also mandated among essential (60%), stretch (30%), and multi-site (10%) measures.

Unlike SC, where multiple customer inputs are combined by formula, in NNSA the site office manager has a significant role in subjectively considering multiple customer inputs and determining the overall evaluation scores, subject to NNSA management review at the joint meeting described in Appendix D-2.

In FY 2011, the 3 labs applied the NNSA guidance and presented their evaluations in different ways. LANL was evaluated against 17 performance objectives (split among the 3 categories and multi-site). Most of the objectives had numerous specific measures and targets (150), which were assessed individually. Several of the 17 objectives, while also associated with an at-risk fee

amount, were broad, subjective measures, with no, or only a few subjective measures to be assessed. In FY 2011, Sandia was pilot-testing the NNSA strategic evaluation approach. Summary scores were developed for each of the 6 major performance objectives, and summary narrative evaluations were presented for each of the measures under the objectives; individual targets were not specifically addressed.

The LLNL evaluation included 11 objectives, 41 measures, and 80 targets, but did not associate any with specific fee amounts below the major performance categories. In the LLNL evaluation report, adjectival ratings are given for each objective and measure and are rolled up into summary evaluations of each of the performance categories. The evaluation also identified measures and targets as "essential" and "stretch." The stretch targets (all pass/fail) are individually reported and the overall percentage met provided. The report includes both the NNSA evaluation and the lab's self-assessment rating. Differences in grades are not directly addressed in the report.

NNSA 2013

The strategic PEP is entirely subjective, with the exception of a limited number of site-specific outcomes. Each of the 5 performance objectives is allocated a portion of the at-risk fee; the allocation is unique to each lab and facility. Each objective has a limited number of "contributing factors" listed, but no allocation or weight is given to them.

NNSA had not yet issued guidance on how to assess the labs or calculate scores at the time of the Academy's study.

NUCLEAR ENERGY/IDAHO NATIONAL LAB

The PEMP provides grading definitions to use for each of the 6 focus areas. In developing the plan, EERE also establishes relative weights for the focus areas and the objectives (results statements) associated with each focus area.

Using the grading definitions, program customers provide scores and narrative support for each objective. Unlike SC—where multiple customer inputs are weighted by relative proportion of funding and goal importance, and final scores are calculated by formula—in NE, the site office manager uses subjective judgment to combine multiple customer evaluations into one overall score for each objective and goal.

Letter scores are associated with numerical scores, using the same scale as shown in Table D-3.1 for SC. The letter scores associated with each focus area are then used to compute award fee, as described in Appendix D-4.

ENERGY EFFICIENCY AND RENEWABLE ENERGY/NATIONAL RENEWABLE ENERGY LAB

The PEMP provides 1 set of grading definitions for use with all objectives and goals. Letter scores are associated with numerical scores, using the same scale as shown in Table D-3.1 for

SC. In developing the PEMP, EERE also establishes weights for the goals and for objectives within the goals. The site office prepares the draft evaluation from program customer input. Similar to SC, the overall rating for each objective is calculated from multiple program customer inputs using a formula that weights inputs according to each program's relative funding levels at the lab.[9] Objective scores are rolled up to goal scores using the objective weights.

In prior years EERE used an electronic system similar to SC's to input and calculate multiple program customer evaluations. However, EERE senior management questioned whether the system was too cumbersome. Consequently, in FY 2012, site office officials interviewed program customers to obtain their input. The evaluation process was not complete at the time of the Academy's work, and officials had no conclusions concerning the usefulness of the electronic system compared to the interview approach. Program inputs will still be weighted based on relative program funding levels.

Like SC, the goal scores are rolled up into summary scores for performance categories using the pre-established goal weights. EERE uses 3 categories: program, operations, and major construction. These category scores are used to calculate award fee, as discussed in Appendix D-4.

[9] Unlike SC, EERE does not consider the programs' relative importance of each objective or goal in this calculation.

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HOW ARE AWARD FEE AND AWARD TERM ELIGIBILITY DETERMINED?

The annual lab evaluation is the primary determinate of the level of award (at-risk) fee the contractor will receive as well as whether a contract extension (award term) will be given, where the award term incentive is used. In all cases, the fee determining official has final approval of the evaluation and the fee, and award term determination and fees can be affected by performance not directly included in the evaluation.

In most cases, predetermined scales are used to determine the portion of the at-risk fee to be awarded, based on evaluation scores. These scales are, in some cases, applied to individual goal scores and in others to cumulative scores for categories of performance, such as mission or operations.

In SC and EERE, scores for operational performance cannot increase fee above that calculated based on mission performance, but in NNSA operational performance directly affects fee. In NE the contractor is held accountable for operational performance primarily through contract provisions other than the performance evaluation.

OFFICE OF SCIENCE

Award Fee

SC has specified the portion of the available award (at-risk) fee that will be given, based on the PEMP scores. The proportion of the at-risk fee awarded for each score differs for the summary science (mission) objectives and summary maintenance and operations objectives, as shown in Table D-4.1. As can be seen in the table, in calculating the award fee, maintenance and operations performance cannot increase fee, but if performance is below "meets expectations" (B+) the otherwise awarded fee is reduced.

Table D-4.1: Performance-Based Fee Earned Scale

Grade	Percent Fee Earned For science	Percent earned for Maintenance & Operations
A+	100%	100%
A	97%	100%
A-	94%	100%
B+	91%	100%
B	84%	95%
B-	77%	90%
C+	64%	85%
C	38%	75%
C-	0%	60%
D	0%	0%
F	0%	0%

The calculation of award fee combines the scores for science and for maintenance and operations as shown below.

Proportion for Science Score X Proportion for Maintenance & Operations Score = Fee Percentage Awarded

Available At-Risk Fee ($) X Fee Percentage Awarded = Award Fee ($)

Award Term

Current SC policy allows contractors who exceed expectations to be awarded an award term contract extension. At this time, 6 of the 10 SC M&O contractors have this provision in their contracts. The others will be written in as the contracts are renewed.

Under the award term provision, at the end of the first 3 years of the contract (usually a 5-year base contract), the contractor can receive a 1 to 3 year extension, for up to 15 years in addition to the original contract period. Generally, contractors who attain scores of at least an A- in overall science and a B+ in overall maintenance & operations are awarded an extension. The contractor is not eligible for an extension if the score in any 1 science goal is below a B+ or any 1 maintenance and operations goal is below a B-.

NATIONAL NUCLEAR SECURITY ADMINISTRATION

Award Fee[10]

As described in Appendix D-3, before 2013, NNSA labs were evaluated against numerous individual criteria unique to each lab. Adjectival ratings, and associated ranges of fee, were used to determine the percentage of the at-risk fee that was earned for each level of performance. The adjectival definitions and associated percentage ranges of fee that could be awarded are shown in Table D-4.2.

Table D-4.2: NNSA Adjectival Rating Criteria and Fee Ranges[11]

Adjectival Rating Subjective	Fee Range	Definition
Excellent	91-100%	Contractor has exceeded almost all of the significant award fee criteria and has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.
Very Good	76%-90%	Contractor has exceeded many of the significant award fee criteria and has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.
Good	51% - 75%	Contractor has exceeded some of the significant award fee criteria and has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.
Satisfactory	No Greater than 50%	Contractor has met overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.
Unsatisfactory	0%	Contractor has failed to meet overall cost, schedule, and technical performance requirements of the contract as defined and measured against the criteria in the award-fee plan for the award-fee evaluation period.

As discussed in Appendix D-3, NNSA 2011 guidance set forth several allocations for the available at-risk fee. Allocations were set among the performance categories (35% programs, 35% operations, 20% business, and 10% multi-site); between subjective (50%) and objective (50%) measures; and among essential (60%), stretch (30%), and multi-site (10%) measures. The stretch measures represented incentivized opportunities to earn higher at-risk fees.
Table D-4.3 demonstrates the relationship between these allocations in accordance with the guidance.

[10] Unlike SC and NE, NNSA includes both a fixed fee and award fee in its contracts.

[11] These percentages and definitions are taken from the Federal Acquisition Regulation.

Table D-4.3: NNSA Allocations of Available At-Risk Fee (FY 2011)[a]

Type of Measure	Programs	Operations	Business/ Management	Multi-Site
Essential (subjective)				
Essential (objective)				
Stretch (objective)				
Multi-Site [b] (objective)				
Earned At-Risk Fee				
Total Available				

[a] Table intentionally left blank.

[b] Measures are applicable to more than 1 NNSA facility; all applicable facilities must meet the objective for any of the facilities to be awarded the allocated fee.

The guidance also established "gateways," or minimum achievement levels, that had to be met to be eligible for fee allocated to stretch measures. In order to be eligible to earn the at-risk fee associated with the stretch measures in a particular performance category, the lab must have:

- earned a summary performance category rating of at least a "very good" for the essential subjective measures in that category
- earned at least 80% of the essential objective measures, or 80% of at-risk fee associated with essential objective measures, in that category

The award for stretch targets was equal to the amount of at-risk fee allocated to stretch targets times the percentage of stretch targets met.

As discussed in Appendix D-3, evaluation plans varied in the level of detailed measures included within the NNSA-mandated performance categories. Evaluation plans also differed in the way the at-risk fee was allocated within the mandated allocations to the categories. Those differences directly affected how fees were calculated. For example, for LANL much of the fee was allocated to specific objectives within categories, and fee was awarded in whole or part for each objective. In contrast, for LLNL, fee was only allocated at the category level, though the evaluation of many specific objectives fed the overall category assessment; the impact of any 1 objective on fee was subjectively determined and not articulated in the evaluation report.

Sandia's PEP set forth objectives in 2 performance categories—mission and mission support. These were used as "gateways" to earning at-risk fees. A score of at least "very good" was required in each area for the contractor to be eligible to earn at-risk fee. Available at-risk fee was allocated to a set of performance-based incentive objectives. These objectives related to the 2 performance categories as well as to multi-site objectives, and had performance measures that were specific, pass/fail outputs.

Evaluation criteria have changed with the implementation of the 2013 strategic PEP process. Guidance for calculating fees has not yet been issued, but NNSA is no longer including stretch

measures, objective measures (with the exception of the site-specific outcomes), or multi-site objectives.

Award Term[12]

According to the FY 2011 NNSA guidance, to be eligible for award term, as discussed in Appendix D-3, the lab must have:

- achieved an overall rating (combining the 3 performance categories) of "very good"
- had an 80% success rate for objective/essential measures
- have met at least 4 of 5 lab-specific award term criteria, with at least 1 designated by the site office as mandatory

Under the strategic PEP process, contractors are eligible for award term if they earn an adjectival score of at least "very good" for each of the 5 performance objectives and experience no significant safety or security incident during the performance period.

NUCLEAR ENERGY/IDAHO NATIONAL LAB

As discussed in Appendix D-3, an evaluation score is determined for each of the 6 focus areas. The scores correspond to a percentage of at-risk fee that can be awarded for that level of performance. The percentages are identical to those shown in Table D-4.1 for SC's science/mission objectives.

For each of the 6 focus areas, the percentage of at-risk fee allocated based on the score is multiplied by the weight of the focus area, which was assigned when the PEMP was developed. Those 6 totals are added together to determine the percent of at-risk fee to be awarded. Table D-4.4 demonstrates the final fee calculation.

[12] In FY 2011 and 2012, LLNL and LANL had award term incentives; Sandia did not. In FY 2013, all 3 NNSA lab contractors have award term incentives in the PEP.

Table D-4.4: Calculation of INL Contractor Fee per PEMP Evaluation

Focus Areas	Evaluation Letter-Numeric Score	Percent Fee Earned (based on Table D-4.1)	X	Goal Weight Established in PEMP (2011 weights)	X	Total At-Risk Fee	=	Total Fee Earned
1. Deliver Transformational R&D	#	%		5%		$		$
2. Deliver R&D Program Commitments	#	%		35%		$		$
3. Develop Capabilities for the Future	#	%		20%		$		$
4. Establish Broader, More Effective Collaborations	#	%		10%		$		$
5. Safety, Operations & Stewardship	#	%		25%		$		$
6. Leadership of the INL	#	%		5%		$		$
			Total Fee			$		$
			Overall Fee %					%

There is no award term provision in the current INL contract. The contract was awarded for 10 years with provision for a mid-term assessment, giving DOE the option of cancelling at that time. Subsequently, 1-year options can be exercised at DOE's discretion.

ENERGY EFFICIENCY AND RENEWABLE ENERGY/NATIONAL RENEWABLE ENERGY LAB

The award fee is calculated from the 3 performance category scores—mission, operations, and construction— which are discussed in Appendix D-3. The contract splits the at-risk fee into 2 parts: mission and construction. EERE assigns a percent of at-risk fee to be awarded for each performance level for mission and for construction, and uses an "operation multiplier" in the same manner as SC does for both parts of the award fee calculation. And, as in SC, the operations score only affects the fee calculation if there are problems.

The allocation of fee for the science/mission scores and for operation scores are the same as those for SC. Table D-4.5 below shows how the scores relate a portion of the at-risk fee for each of the performance categories.

Table D-4.5: EERE's Science and Major Construction Performance-Based Earned Fee Scale

Final Grade	Weighted Score	Percent of Earned Fee for Science	Percent of Earned Fee for Major Construction	Percent of Earned Fee for Operations
A+	4.3 - 4.1	100%	100%	100%
A	4.0 - 3.8	97%	98%	100%
A-	3.7 - 3.5	94%	96%	100%
B+	3.4 - 3.1	91%	94%	100%
B	3.0 - 2.8	84%	88%	95%
B-	2.7 - 2.5	77%	85%	90%
C+	2.4 - 2.1	64%	75%	85%
C	2.0 - 1.8	38%	50%	75%
C-	1.7 - 1.1	0%	0%	60%
D	1.0 - 0.8	0%	0%	0%
F	0.7 -0.0	0%	0%	0%

In summary, the portion of the total at-risk fee to be awarded is calculated as:

% mission X % operations X $ mission at-risk fee

PLUS

% construction X % operations X $ construction at-risk fee

***

Table D-4.5 summarizes key elements of each sponsoring agency's use of award fee and award term.

Table D-4.6: Sponsoring Organization Award Fee and Award Term Determinations

	Office of Science	NNSA Before 2013	NNSA 2013	Nuclear Energy	EERE/NREL
Criteria	PEMP/PEP evaluation is key determinant of fee; but performance in other contract areas can result in changing fee award. Fee determining official has final approval authority on fee and award term decisions.				
Type of Fee	• Award Fee	LLNL: • Fixed fee (30% of available fee) * • Award fee (70% of available fee) = at-risk fee*	• No change	• Award Fee	• Award Fee
Size of At-Risk Fee	• Relatively small (Less than $1M to $11M) • Expect contractors to get most of it every year (over 90%)	• At-risk fee is relatively large (LLNL: about $30M)* • Award percentages are somewhat lower (80s); LLNL: 88%	• No change	• Relatively small (about $18M)—larger than SC, but less than 2% of lab budget • Contractor can expect to earn 90-95% each year	• Relatively small ($8M), less than 3% of lab budget. • Contractor can expect to get 90%
Key Factor in Fee	• Program and leadership evaluations drive fee award; operations evaluation can lower rating/fee, not increase it	• Relatively greater focus on operational performance, which together with business accounts for 55% of the evaluation and fee award • Specifies essential and stretch measures to "incentivize" performance above and beyond expectations. Must achieve essential to be awarded stretch fee in any area	• Operations 1 of 5 performance objective areas • Emphasis on operations apparently reduced—allocation unique for each lab • 2013 allocations = ·LANL – 20% ·LLNL – 30% ·SNL – 15%	• Fee calculation focuses heavily on program performance • All 6 focus areas assess primarily program performance; each is weighted, and weight is applied directly to available fee	• Mission and construction scores drive fee; operations evaluation can lower rating/fee, not increase it

Continued

	Office of Science	NNSA Before 2013	NNSA 2013	Nuclear Energy	EERE/NREL
Use of Award Term	• Eligible if summary Science grade is at least A-; summary Maintenance & Operations grade is at least B+; no individual Science goal below B+; no individual Maintenance and Operations goal below B- • Director, SC has final approval of any extension • 6 of 10 labs currently use; others will be added as contracts renewed	• Used at LLNL and LANL • Must achieve minimum levels for performance categories and each performance objective in overall evaluation • Must achieve 4 of the 5 Award Term Incentive-specific incentives; and all mandatory Award Term Incentives • FDO final approval of any extension	• Used at all 3 labs • Must earn at least "very good" for all 5 objectives and experience no significant safety or security incident	• INL does not use • Contract is for 10 years with mid-term assessment; DOE option of cancelling then. Subsequently, 1-year options can be exercised at DOE's discretion	• Not used at NREL

*Negotiated as part of prime contract. Percentages vary among labs and facilities; the numbers shown are for LLNL.

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HOW IS THE SAVANNAH RIVER NATIONAL LAB EVALUATED?

The Savannah River National Laboratory (SRNL) is located on DOE's Savannah River Site. The site performs work primarily for EM and NNSA. It processes and stores nuclear material in support of national defense and U.S. nuclear non-proliferation efforts. The site also develops and deploys technologies to improve the environment and treat nuclear and hazardous wastes left from the Cold War. EM "owns" the site; NNSA is a tenant. The site is overseen by DOE's Savannah River Operations Office.

There are several contractors working at the site. The overall scope of work for 1 of the major site contractors includes operation of SRNL. It is a cost plus award fee contract. The contractor's work at the lab is overseen on a day-to-day basis by the Office of Laboratory Oversight, which reports to the Savannah River Operations Office, in conjunction with the NNSA Savannah River Site Office.

SRNL's vision, as stated in the contract, is to be the Nations' premier laboratory in Environmental Management, National & Homeland Security, and Energy Security. SRNL's 3-fold mission is stated in the contract as:

- enable the success of site and EM operations and projects
- provide technical leadership for future site missions
- utilize its technical expertise to provide vital national and regional support in achieving the broader goals of DOE and the federal government.

EVALUATION OF THE LAB

The lab's evaluation plan and evaluation report are part of the contractor's site-wide evaluation. Evaluation objectives and criteria for the overall contractor are laid out primarily in Performance Incentive Documents (PIDs), which are included as attachments to the contractor's performance evaluation plan. There are separate PIDs for EM and for NNSA.

One of 6 EM PIDs sets forth specific expectations and evaluation criteria for the lab, but other criteria included for the overall contract also relate to work done at the lab. There are 2 PIDs for NNSA work. One of those includes a set of criteria for the lab, but, as with the EM criteria, other NNSA criteria relate to the lab's work.

What is Measured?

The criteria that speak directly to the lab's portfolio of work relate to performance in specific program areas. There are no specific operational or leadership criteria for the lab; those performance categories are covered in the criteria for the overall contract for site management and operations.
Key components of the PIDs include:

- activity statement

- contract outcome completion criteria
- sub-criteria
- acceptance criteria
- dollar amounts associated with each outcome statement

For FY 2013, however, the NNSA portion of the contractor's evaluation plan is in the form of the strategic PEP used for all NNSA facilities. There are no lab-specific criteria, including no site-specific outcomes related to the lab.

What is the Process for the Evaluation?

DOE federal officials and the contractor work annually to develop mutually agreed upon contract incentives for the evaluation plan, which covers all of the contractor's responsibilities. EM and NNSA headquarters contracting authorities review the PEMP. The manager of the DOE Savannah River Operations Office is the fee determining official and has final approval of the PEMP, evaluation, and fee award.

An Integrated Project Team (IPT), composed of both EM and NNSA officials at the site, as well as contractor representatives, provides senior site management a process for evaluating and measuring performance tied to strategic goals. The DOE Operations Office Manager heads the IPT. One team responsibility is to review and assess contractor performance and project status against parameters, baselines, milestones, and deliverables.

A Fee Board is responsible for ensuring that quality assessments have been completed for fee-bearing work, and that the assessments have been formally documented before recommending payment of fee to the fee determining official. The membership of the Fee Board is a sub-set of the IPT.

The head of the Office of Laboratory Oversight writes the evaluation for the EM portion of the lab's work. The office also prepares a monthly assessment—which includes PEMP criteria as well as many operational aspects, such as safety, security, and environmental performance issues—and works with lab officials to work through disagreements about performance and to ensure needed improvements are made. This evaluation is incorporated into the contractor's overall evaluation and is reviewed by the IPT and Fee Board. While the Office has the lead on lab oversight and evaluation, it works closely with the NNSA Site Office, which provides the evaluation criteria for and assessment of NNSA's work at the lab.

How is Award Fee Calculated?

The overall fee distribution between EM and NNSA for the entire contract is based on proportional funding levels. In 2012, NNSA provided 43% of the total site funding and EM 57%; fee was allotted on those percentages.[13]

[13] Officials estimated that NNSA provided about 35% of the Lab's funding, with EM providing the remaining 65%. At-risk fee is not allocated to the Lab on this basis.)

The evaluation plan allocates specific amounts of at-risk fee for each major objective. In the 2 cases where the lab's work is clearly identified (one set of objectives in the EM PID and one in the NNSA PID), it is possible to identify some of the at-risk fee the contractor could earn through the lab's efforts. However, as with all DOE lab contracts, the fee awarded is paid to the contractor, not the lab. Because the lab's evaluation is linked to the contractor's other (broader) work at the site, it is not possible to determine the total at-risk fee allocated to the lab or the amount of the earned fee attributable to the lab's efforts.

COVER IMAGE CREDITS

Image is of the Saturn Accelerator, Sandia National Laboratories (Photo credit: Randy Montoya, Sandia National Laboratories)

Description: The Saturn accelerator is a modular, high-power, variable-spectrum, x-ray simulation source. Saturn is used to simulate the radiation effects of nuclear countermeasures on electronic and material components, as a pulsed-power and radiation source, and as a diagnostic test bed.

Source: "Pulsed Power Facilities: Saturn Accelerator," Sandia National Laboratories. 2010 Sandia Corporation <http://www.sandia.gov/pulsedpower/facilities/saturn.html>

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