

U.S. Department of Energy

Office of Science

Fiscal Year 2012

Performance Evaluation Report of the

Jefferson Science Associates, LLC for

**Management and Operations of Science and Technology
at the**

Thomas Jefferson National Accelerator Facility

For the period October 1, 2011, to September 30, 2012

I. OVERALL SUMMARY RATING/FEE

Performance-Based Score and Adjectival Rating:

The basis for the evaluation of Jefferson Science Associates, LLC (JSA or the Contractor) management and operations of the Thomas Jefferson National Accelerator Facility (TJNAF or the Laboratory) during FY 2012 centered on the objectives found within the following performance goals:

- 1.0 Provide for Efficient and Effective Mission Accomplishment
- 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operation of Research Facilities
- 3.0 Provide Effective and Efficient Science and Technology Program Management
- 4.0 Provide Sound and Competent Leadership and Stewardship of the Laboratory
- 5.0 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection
- 6.0 Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)
- 7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs
- 8.0 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems

Each performance goal was composed of two or more weighted objectives and most objectives had a set of performance measures, which assisted in determining the Contractor's overall performance in meeting that objective. Each of the performance measures identified significant activities, requirements, and/or milestones important to the success of the corresponding objective. The following describes the methodology utilized in determining the Contractor performance rating.

Calculating Individual Goal Scores and Letter Grades:

Each objective is assigned the earned numerical score by the evaluating office as stated above. The goal rating is then computed by multiplying the numerical score by the weight of each objective within a goal. These values are then added together to develop an overall numerical score for each goal. For the purpose of determining the final goal grade, the raw numerical score for each goal will be rounded to the nearest tenth of a point using the standard rounding convention discussed below and then compared to Figure 1. A set of tables is provided at the end of each performance goal section of this document to assist in the calculation of objective numerical scores to the goal grade. No overall rollup grade shall be provided. The raw numerical score for S&T and M&O will be rounded to the nearest tenth of a point of purposes of determining fee. A standard rounding convention of x.44 and less rounds down to the nearest tenth (here, x.4), while x.45 and greater rounds up to the nearest tenth (here, x.5).

| Final Grade | A+ | A | A- | B+ | B | B- | C+ | C | C- | D | F |
|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------|
| Total Score | 4.3-4.1 | 4.0-3.8 | 3.7-3.5 | 3.4-3.1 | 3.0-2.8 | 2.7-2.5 | 2.4-2.1 | 2.0-1.8 | 1.7-1.1 | 1.0-0.8 | 0.7-0 |

Figure 1. FY 2012 Contractor Letter Grade Scale

The eight performance Goal grades shall be used to create a report card for the laboratory (see Figure 2, below).

| Performance Goal | Grade |
|--|-------|
| 1.0 Mission Accomplishment | A- |
| 2.0 Design, Fabrication, Construction and Operations | A- |
| 3.0 S&T Program Management | A- |
| 4.0 Leadership/Stewardship | B+ |
| 5.0 ES&H | B+ |
| 6.0 Business Systems | B+ |
| 7.0 Infrastructure | A- |
| 8.0 Safeguards/Security | B+ |

Figure 2. Laboratory Report Card

Determining the Amount of Performance-Based Fee Earned:

SC uses the following process to determine the amount of performance-based fee earned by the Contractor. The S&T score from each evaluator shall be used to determine an initial numerical score for S&T (see Table A, below), and the rollup of the scores for each M&O performance goal shall be used to determine an initial numerical M&O score (see Table B, below).

| Program | Numerical Score | Weight | Total Score |
|---------------------------------------|-----------------|--------|-------------|
| Biological and Environmental Research | 3.1 | 0.5% | |
| Nuclear Physics | 3.7 | 99.5% | |
| Initial S&T Score | | | 3.7 |

Table A. Fiscal Year Contractor Evaluation Initial S&T Score Calculation

Weight = Program cost divided by total cost

| M&O Performance Goal | Numerical Score | Weight | |
|------------------------------|-----------------|--------|------------|
| 5.0 ES&H | 3.2 | 30.0% | |
| 6.0 Business Systems | 3.3 | 25.0% | |
| 7.0 Infrastructure | 3.5 | 25.0% | |
| 8.0 Safeguards/Security | 3.3 | 20.0% | |
| Initial M&O Score | | | 3.3 |

Table B. Fiscal Year Contractor Evaluation Initial M&O Score Calculation

These initial scores will then be adjusted based on the numerical score for performance goal 4.0 (See Table C, below).

| | Numerical Score | Weight | |
|---------------------------------|-----------------|--------|------------|
| Initial S&T Score | 3.7 | 75% | |
| Goal 4.0 Leadership/Stewardship | 3.4 | 25% | |
| Final S&T Score | | | 3.6 |
| Initial M&O Score | 3.3 | 75% | |
| Goal 4.0 Leadership/Stewardship | 3.4 | 25% | |
| Final M&O Score | | | 3.3 |

Table C. Fiscal Year Final S&T and M&O Score Calculation

The percentage of the available performance-based fee that may be earned by the Contractor shall be determined based on the final score for S&T (See Table C) and then compared to Figure 3, below. The final score for M&O from Table C shall then be utilized to determine the final fee multiplier (see Figure 3) which will determine the final percentage of fee earned (see Table D). The actual amount of performance-based fee earned for FY 2012 is then calculated as shown in Table E.

| Overall Weighted Score from Table A | Percent S&T Fee Earned | M&O Fee Multiplier |
|-------------------------------------|------------------------|--------------------|
| 4.1 to 4.3 | 100.00% | 100.00% |
| 3.8 to 4.0 | 97.00% | 100.00% |
| 3.5 to 3.7 | 94.00% | 100.00% |
| 3.1 to 3.4 | 91.00% | 100.00% |
| 2.8 to 3.0 | 88.00% | 95.00% |
| 2.5 to 2.7 | 85.00% | 90.00% |
| 2.1 to 2.4 | 75.00% | 85.00% |
| 1.8 to 2.0 | 50.00% | 75.00% |
| 1.1 to 1.7 | 0.00% | 60.00% |
| 0.8 to 1.0 | 0.00% | 0.00% |
| 0.0 to 0.7 | 0.00% | 0.00% |

Figure 3. Performance Based Fee Earned Scale

| Overall Fee Determination | |
|--------------------------------------|-----------|
| Percent S&T Fee Earned From Figure 3 | 94.00% |
| M&O Fee Multiplier From Figure 3 | X 100.00% |
| Overall Earned Performance-Based Fee | 94.00% |

Table D. Final Percentage of Performance Based Fee Earned Determination

| Earned Fee Calculation | |
|--|-------------|
| Available Fee | \$3,100,000 |
| Overall Earned Performance-Based Fee (Table D) | X 94.00% |
| Earned Fee | \$2,914,000 |

Table E. Earned Fee Calculation

II. PERFORMANCE GOALS, OBJECTIVES, AND MEASURES/TARGETS

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

The Contractor produces high-quality, original, and creative results that advance science and technology; demonstrates sustained scientific progress and impact; receives appropriate external recognition of accomplishments; and contributes to overall research and development goals of the Department and its customers.

Objectives

1.1: Provide Science and Technology Results with Meaningful Impact on the Field

1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

The Department has assigned an overall grade of A- for this performance goal. SC assessments of the goal and related objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.

Nuclear Physics (NP)

The scores and grades for performance goals 1.0-3.0 are based on the 2012 TJNAF Science and Technology Review, the 2012 TJNAF Theory Group Continuation Progress Report, communication to NP at the February Laboratory Managers' Briefings, and Supplemental Information, biweekly teleconferences, regular one-on-one discussions with the Laboratory Director, and NP program managers' site visits, their observations at national meetings, and their judgment.

- Researchers conducted experiments that provide high impact on the field of nuclear physics: exploration of the EMC Effect; of the existence of neutrons skins; of electric and magnetic form factors, of the weak charge of the proton and electroweak properties of nature. The Laboratory developed a dedicated computer cluster with ARRA funds that incorporates graphic processor units (GPUs) to apply to lattice quantum chromodynamics (LQCD) calculations, which has increased the computing power available to US users for LQCD applications by over a factor of five at a relatively modest cost. This GPU cluster is being used for extensive calculations of various properties of hadrons that will be investigated experimentally at TJNAF during the 12 GeV era.
- Theorists have calculated hadronic corrections to the muon magnetic moment with two flavors, while experiments are reaching an accuracy sufficient for four-flavor calculations in progress to determine whether beyond-the-standard-model physics contributes.
- The Laboratory provided leadership in the topics of medium energy through meetings and workshops; serves in organizational roles for national and international conferences, meetings, and workshops.
- The SRF and cryogenic groups are recognized for their expertise world-wide. CASA research is internationally respected.
- The Laboratory staff and facilities provided a sustained level of peer-reviewed journal papers, patents and patent disclosures, and invited talks.

Biological and Environmental Research (BER)

- The Laboratory Radionuclide Imaging SFA continues to make progress in the design and development of systems for plant imaging.

| Science Program Office | Letter Grade | Numerical Score | Objective Weight | Overall Score |
|--|--------------|-----------------|------------------|---------------|
| Biological and Environmental Research | | | | |
| 1.1 Impact | B+ | 3.1 | 60.0% | |
| 1.2 Leadership | B+ | 3.1 | 40.0% | |
| Overall BER Total | | | | 3.1 |
| Nuclear Physics | | | | |
| 1.1 Impact | A- | 3.7 | 50.0% | |
| 1.2 Leadership | A- | 3.6 | 50.0% | |
| Overall NP Total | | | | 3.7 |

Table 1.1. Program Performance Goal 1.0 Score Development

| Program Office | Letter Grade | Numerical Score | Weight | Overall Weighted Score |
|---------------------------------------|--------------|-----------------|--------|------------------------|
| Biological and Environmental Research | B+ | 3.1 | 1.0% | |
| Nuclear Physics | A- | 3.7 | 99.0% | |
| Performance Goal 1.0 Total | | | | 3.7 |

Table 1.2. Overall Performance Goal 1.0 Score Development

| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
|-------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 1.3. Goal 1.0 Final Letter Grade

Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities

The Contractor provides effective and efficient strategic planning; fabrication, construction and/or operations of Laboratory research facilities; and are responsive to the user community.

Objectives

2.1: Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)

2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)

2.3: Provide Efficient and Effective Operation of Facilities

2.4: Utilization of Facility(ies) to Provide Impactful S&T Results and Benefits to External User Communities

The Department has assigned an overall grade of A- for this performance goal. SC assessments of the goal and related objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.

Nuclear Physics (NP)

- The 12 GeV CEBAF Upgrade Project is making very good progress in regards to the accelerator scope of work.
- The Laboratory responded effectively to the reduced FY 2012 Appropriations and is actively working to address the performance baseline changes resulting from the directed change.
- The project team, with TJNAF Director engagement, is actively managing high risk aspects of the project, including the superconducting magnets in Hall B and Hall C.
- Reliable beam performance at the Continuous Electron Beam Accelerator Facility was provided to successfully complete the planned experiments in the 6 GeV program.

| Science Program Office | Letter Grade | Numerical Score | Objective Weight | Overall Score |
|---|--------------|-----------------|------------------|---------------|
| Nuclear Physics | | | | |
| 2.1 Support Laboratory Programs | | | 0.0% | |
| 2.2 Construction of Facilities | B+ | 3.4 | 45.0% | |
| 2.3 Operation of Facilities | A- | 3.7 | 40.0% | |
| 2.4 S&T Results and Benefits to External User Communities | A- | 3.6 | 15.0% | |
| Overall NP Total | | | | 3.6 |

Table 2.1. Program Performance Goal 2.0 Score Development

| Program Office | Letter Grade | Numerical Score | Weight | Overall Weighted Score |
|-----------------------------------|--------------|-----------------|--------|------------------------|
| Nuclear Physics | A- | 3.6 | 100.0% | |
| Performance Goal 2.0 Total | | | | 3.6 |

Table 2.2. Overall Performance Goal 2.0 Score Development

| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
|-------|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 2.3. Goal 2.0 Final Letter Grade

Goal 3.0: Provide Effective and Efficient Science and Technology Program Management

The Contractor provides effective program vision and leadership; strategic planning and development of initiatives; recruits and retains a quality scientific workforce; and provides outstanding research processes, which improve research productivity.

Objectives

3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

The Department has assigned an overall grade of A- for this performance goal. SC assessments of the goal and related objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.

Nuclear Physics (NP)

- TJNAF has an articulated mission statement, vision, and 5-year strategic plan; the management engages a variety of external and internal groups for guidance to set strategic scientific goals.
- The TJNAF scientific goals are well aligned with those of the nuclear physics program. Work-for-others projects exploit and support core competencies that are a resource for other DOE laboratories.
- The Laboratory effectively managed the completion of the 6 GeV experimental program while building the 12 GeV CEBAF Upgrade Project.

- The TJNAF Theory Group is working effectively, within current funding limitations, to elevate its activities, including the activities of the former Excited Baryon Analysis Center, into a TJNAF Physics Analysis Center. In response to an S&T Review recommendation, a plan is being developed for the role of the Theory Group in the 12 GeV era.

Biological and Environmental Research (BER)

- TJNAF continues to be effective in managing limited resources by leveraging expertise and resources within the Laboratory to accomplish their goals.

| Science Program Office | Letter Grade | Numerical Score | Objective Weight | Overall Score |
|--|--------------|-----------------|------------------|---------------|
| Biological and Environmental Research | | | | |
| 3.1 Efficient Strategic Planning and Stewardship | B+ | 3.1 | 20.0% | |
| 3.2 Project/Program/Facilities Management | B+ | 3.1 | 30.0% | |
| 3.3 Effective Communications and Responsiveness | B+ | 3.1 | 50.0% | |
| Overall BER Total | | | | 3.1 |
| Nuclear Physics | | | | |
| 3.1 Efficient Strategic Planning and Stewardship | A- | 3.7 | 40.0% | |
| 3.2 Project/Program/Facilities Management | A- | 3.7 | 35.0% | |
| 3.3 Effective Communications and Responsiveness | A- | 3.5 | 25.0% | |
| Overall NP Total | | | | 3.7 |

Table 3.1. Program Performance Goal 3.0 Score Development

| Program Office | Letter Grade | Numerical Score | Weight | Overall Weighted Score |
|--|--------------|-----------------|--------|------------------------|
| Biological and Environmental Research | B+ | 3.1 | 0.6% | |
| Nuclear Physics | A- | 3.7 | 99.4% | |
| Performance Goal 3.0 Total | | | | 3.7 |

Table 3.2. Overall Performance Goal 3.0 Score Development

| | | | | | | | | | | | |
|--------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 3.3. Goal 3.0 Final Letter Grade

Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory

This Goal evaluates the Contractor Leadership capabilities in leading the direction of the overall Laboratory, the responsiveness of the Contractor to issues and opportunities for continuous improvement, and corporate office involvement/commitment to the overall success of the Laboratory.

The Department has assigned an overall grade of B+ for this performance goal. Comments are contained within the individual objectives that follow.

4.1: Leadership and Stewardship of the Laboratory

In FY 2012, the Contractor met SC's expectations with respect to this objective. Highlights of the Contractor's performance in this area include:

The Laboratory's senior management team delivered and briefed a vision for the Laboratory centered on a fully supported Nuclear Physics (NP) program and future experiments using the 12 GeV upgrade. Laboratory management has done an excellent job in working with the community to develop a scientific vision for the upcoming 12 GeV program. The Laboratory has worked with the community to lead the development of several possible future detector projects for the 12 GeV program. The Laboratory also provided a far reaching vision for long term development and construction of a Medium Energy Electron Ion Collider. Laboratory management has worked very well with the community to help further the scientific and technical case for a proposed electron ion collider.

Laboratory management did an outstanding job of juggling competing priorities and varying community needs in completing the 6GeV program before the shutdown of the Continuous Electron Beam Accelerator Facility (CEBAF) for the planned installation of 12 GeV components. Laboratory management has been innovative in identifying new opportunities at the Free Electron Laser Facility, such as dark photon searches.

Laboratory management does an outstanding job in working with NP, other programs, and industry in the field of superconducting radiofrequency (SRF) cavities. Their expertise is recognized world-wide. Laboratory management effectively nurtures core competencies that are vital to SC missions and other federal missions. In addition to a highly reputable SRF core competency, that in cryogenics has had recent significant impacts on the NP Facility for Rare Isotope Beams (FRIB) project, and National Aeronautics and Space Administration (NASA).

The Laboratory has a strong relationship with surrounding universities. The Laboratory has used bridging positions effectively to build up its user base at those universities. The relationship with Old Dominion University to further accelerator research and development (R&D) education is commended. Laboratory management has cultivated good relationships with local and state government, receiving support on land acquisitions, to the benefit of DOE. The Laboratory's outreach program is phenomenal and recently was awarded a Secretary of Energy's Achievement Award.

4.2: Management and Operation of the Laboratory

Notable Outcome: Continue evolution of TJNAF CAS.

Notable Outcome: Provide leadership in developing and coordinating the assessment of regional energy coalition concepts involving internal and external resources to determine the viability of concepts, and to help provide a forum for discussion and exchange that could lead to an action plan to address long-term energy needs.

Notable Outcome Comments: The objective contained two Notable Outcomes and the Department has determined that the performance on these Notable Outcomes met expectations.

The Laboratory continued to work closely with the Site Office to improve CAS implementation. The tri-party meetings and the senior management CAS meetings have been good tools for communicating CAS progress between the Site Office and the Laboratory.

Laboratory management has taken an active role with other government entities in the area to address green energy issues with the operations of their facilities. Laboratory management continued with other public and private sector groups to establish the Hampton Roads Energy Corridor which will provide long term sustainability power options to regional facilities. The Laboratory hosted discussions with this group which is helping to establish common ground to develop ways to meet energy needs of the future for the entire region's sustainability goals.

General Comments:

In FY 2012, the Contractor exceeded SC's expectations with respect to this objective. Highlights of the Contractor's performance in this area include:

The Laboratory management provided strong leadership and support to other Laboratories in the complex through their participation in Contractor Assurance System (CAS) Boards and Committees at Fermi and Argonne. In addition, the Laboratory Chief Operating Officer (COO) has provided valuable leadership in serving as co-chair of the Science Laboratory Operations Improvement Committee (OIC), which is implementing cost savings initiatives for management and operations of the entire system of Laboratories. Members of the Laboratory management team provided strong leadership in the OIC and worked with Site Office representatives in identifying improvement activities for implementation. Through these efforts Laboratory management and Site Office representatives provided leadership in identifying improvement initiatives in the areas of Acquisition Optimization, Financial Management, Information Technology, Human Capital, Infrastructure Management and Requirements Management for implementation throughout the SC Laboratories.

Laboratory management has done an excellent job in responding to fluctuating budget climates and a reduction in planned funding for the 12 GeV project. Laboratory management worked well with NP in FY 2012 to provide needed information to develop a plan as to how to transition staff from the 12 GeV project back to facility operations. In response to recently identified new cost and schedule risks for the 12 GeV Hall instrumentation, Laboratory management continued to become more proactive in assessing and mitigating potential risks in detector developments for the 12 GeV project.

Management effectively instilled a culture of accountability and responsibility throughout the entire organization. Communication between Laboratory management and NP was strong. Laboratory management communicated effectively with the site office staff.

Management often requests funding re-distributions throughout the year which can be burdensome and imply a lack of planning. The low overhead rates at the Laboratory are commendable.

4.3: Contractor Value-added

Notable Outcome: Continue to deliver on commitments of non-DOE resources, both those detailed in H.30, Agreements and Commitments, and other contributions that help to deliver on the Lab's science mission.

Notable Outcome: Complement evolution of CAS by ensuring that the Contractor's governance structure and function support the Lab and DOE to capitalize on opportunities and address challenges that arise at the Lab.

Notable Outcome Comments: The objective contained two Notable Outcomes and the Department has determined that the performance on these Notable Outcomes met expectations.

JSA continued to effectively manage the Initiatives Fund and provide Skillport and Applied Insight. The JSA Initiatives Fund was used effectively to support the Laboratory's mission through such activities as the Young Physicist Career Development Program, Undergraduate Student Support in Accelerator Sciences and other initiatives.

The Operations and Safety Committee completed an external review of the Laboratory's Occupational Safety and Health Administration categorization and record keeping practices. It is noted that the Committee is seeking a level of independence in this review which provides support to the JSA Board governance role under CAS.

The Finance and Audit Committee continued to take positive steps to ensure that they are fulfilling their governance role with organizational changes and more direct involvement managing the Internal Audit function. DOE is encouraged by the emphasis in being proactive and independent in continuing to fulfill the governance functions.

General Comments:

In FY 2012, the Contractor met SC’s expectations with respect to this objective. Highlights of the Contractor’s performance in this area include:

Corporate owners, Southeastern Universities Research Association (SURA) and Computer Sciences Corporation (CSC), have also demonstrated increasing corporate reach back in support of the Laboratory through the IT steering committee and a cyber security technical testing exercise. SURA continued to support the Laboratory in its outreach programs and community relationships.

Jefferson Science Associates (JSA) is deeply engaged in Laboratory functions and does a superb job in leveraging Laboratory activities. JSA supports the Initiatives Funds program, which provides support to a suite of scientific and accelerator activities, leveraging DOE activities.

| Element | Letter Grade | Numerical Score | Weight | Overall Score |
|--|--------------|-----------------|--------------|---------------|
| Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory | | | | |
| 4.1: Leadership and Stewardship of the Laboratory | B+ | 3.3 | 33.0% | |
| 4.2: Management and Operation of the Laboratory | A- | 3.5 | 33.0% | |
| 4.3: Contractor Value-added | B+ | 3.3 | 34.0% | |
| | | | Total | 3.4 |

Table 4.1. Goal 4.0 SC Program Office Performance Goal Score Development

| | | | | | | | | | | | |
|--------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 4.2. Goal 4.0 Final Letter Grade

Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection

This Goal evaluates the Contractor’s overall success in deploying, implementing, and improving integrated ES&H systems that efficiently and effectively support the mission(s) of the Laboratory.

The weight of this Goal is 30.0%.

The Department has assigned an overall grade of B+ for this performance goal. Comments are contained within the individual objectives that follow.

5.1: Provide an Efficient and Effective Worker Health and Safety Program

The Department recognized the Laboratory’s more balanced self-assessed performance for this objective, properly acknowledging both new safety initiatives as well as safety challenges encountered over the past year. The Laboratory invested significant resources and thought into planning the long shut-down period, which is expected to be a large factor in the strong safety performance of that work effort to this point.

It’s been evident that Laboratory Management recognizes the inherent risks of construction and demolition activities, and the disproportionate contribution of safety related mishaps and near-miss events

attributed to subcontractors and construction activities of the past year. While the management of corrective actions has not always been exemplary in responses to some of the construction related safety events and conditions, it has been clear that progressive actions have been taken, including punitive subcontract actions, when safety performance expectations were not being met. During the year issues on topics such as insufficient Industrial Hygiene support, inadequate work planning documentation, and poor hazard awareness by workers and supervisors have been experienced, and addressed with various levels of success. Sustained oversight and contract management are vital to those and other subcontractor performance vulnerabilities. The assignment of a dedicated Technology and Engineering Development Facility (TEDF) Construction Project Safety Manager is expected to better position the Laboratory in its oversight of construction work planning, and ensuring work is performed in accordance with those work plans and contract requirements. These aspects will be instrumental in meeting the challenge posed by the coordination necessary for pending concurrent occupancy of the Test Lab by construction contractors and the resumption of Superconducting Radio Frequency (SRF) work.

Generally speaking, the Laboratory's ES&H Reporting performance is considered to be greatly improved over the previous year. With only minor exceptions, categorizations and reporting are aligned with Department of Energy (DOE) perspectives. The independent assessment of the Laboratory's OSHA injury reporting, as directed by the Jefferson Science Associates (JSA) Board, represented a responsible means to evaluate the adequacy of the Laboratory's reporting practices.

The continued use of joint ES&H assessments and review activities between the Laboratory and the Department is believed to represent a positive benchmark in efficiency and effectiveness. Additionally, the transparency and engagement during event investigations allows the Department to timely and factually disseminate information and lessons learned to other DOE stakeholders, such as HSS, DOE Construction Safety Committee, and other Office of Science (SC) Site Offices.

The Laboratory continued to apply risk-based tools in the planning of work and the prioritization of assessments, with recent implementation of an electronic system to correlate program areas and risks rationale with the maintenance of records from assessment activities. The Laboratory's initiative to evaluate high consequence events to avoid the "bad day" scenario is considered to be extremely valuable in not losing focus on prevention of the most serious safety issues. Additionally, the recent roll-out of the workforce safety survey is expected to help identify program vulnerabilities that aren't evident from other metrics being used to assess the Laboratory's safety culture, with the added benefit of some comparison afforded by similar surveys administered by peer institutions. The Laboratory has been commended for having active participation in sharing lessons learned within the DOE community. With the recent assignment of a new Operating Experience/Lessons Learned Coordinator, it is expected that the Laboratory can continue to be recognized by its peers as a learning and sharing organization.

5.2: Provide an Efficient and Effective Environmental Management System

The Laboratory Environmental Management System (EMS) program successfully began the transition process from compliance to sustainability. There was an increase in the number of EMS committee meetings over the year, and the membership of the committee changed to include key Facilities Management staff that is responsible for tracking sustainability goals for the Laboratory. The Laboratory provided effective environmental oversight of construction activities for the year.

The JSA Environmental Department served as an advocate for recognition of environmental stewardship activities at the Laboratory. Three awards were received this year, including the DOE Sustainability Award for the Computer Purchasing of Electronics Procurement Environmental Assessment Tool (EPEAT) Compliant products, Platinum Award from the local sanitary district for having achieved 5 years with no notices of violation, and a DOE Bronze award was received by the Procurement Department for reporting of environmentally preferred products.

Evidence of pollution prevention activity at the Laboratory in 2012: a unique pollution prevention activity was recognized by the Site Office this year in the beneficial reuse of lead shielding. The Lead Storage Shed Manager noted that an employee had put in a purchase requisition of lead brick. A clean-up of the

lead storage building resulted in a significant inventory of lead sheeting that was no longer needed. This sheeting was smelted into lead brick at no cost to the Laboratory, save transportation costs to the smelter.

Of note during this year is the Laboratory's planning for the disposition of materials to be removed from the Accelerator Tunnel during the extended shutdown. The Radiation Control Group demonstrated a robust materials clearance process for stands and girders and magnet components removed from the tunnel. This resulted in the ability to segregate and recycle a significant amount of scrap metal not affected by the Secretarial Metals Moratorium/Suspension. In addition, the Central Helium Liquifier shutdown was planned so that the helium inventory would be captured and recycled through the Laboratory's helium vendor.

| Element | Letter Grade | Numerical Score | Weight | Overall Score |
|---|--------------|-----------------|--------------|---------------|
| Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection | | | | |
| 5.1: Provide an Efficient and Effective Worker Health and Safety Program | B+ | 3.1 | 80.0% | |
| 5.2: Provide an Efficient and Effective Environmental Management System | A- | 3.5 | 20.0% | |
| | | | Total | 3.2 |

Table 5.1. Goal 5.0 SC Program Office Performance Goal Score Development

| | | | | | | | | | | | |
|--------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 5.2. Goal 5.0 Final Letter Grade

Goal 6.0: Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)

This Goal evaluates the Contractor's overall success in deploying, implementing, and improving integrated business systems that efficiently and effectively support the mission(s) of the Laboratory.

The weight of this Goal is 25.0%.

The Department has assigned an overall grade of B+ for this performance goal. Comments are contained within the individual objectives that follow.

6.1: Provide an Efficient, Effective, and Responsive Financial Management System(s)

Notable Outcome: Demonstrate efficient and effective execution of all American Recovery and Reinvestment Act (ARRA) activities at the Laboratory.

Notable Outcome Comments: The Department has determined that the performance on this Notable Outcome met expectations.

The Laboratory is projected to be on track to have costed 98.6% of the available obligated ARRA funding by the end of the FY 2012. Funding for four of the six projects are expected to be fully costed and committed by the end of FY 2012 with work continuing over the next few years. The \$10 million project for "TJNAF Infrastructure Investments" was completed under cost during the fiscal year with remaining funds

returned to DOE. Several of the ARRA Work Authorizations were amended in a timely manner to update milestone completion dates.

General Comments:

The Laboratory's business processes insured costs and commitments did not exceed available funding and that regular accounting and budget reports were timely throughout the year. The Laboratory demonstrated a good understanding of their business practices and their "cost of doing business" was the lowest in the entire SC complex. JSA continues to work with other groups such as the DOE Office of the Chief Financial Officer, the National Laboratories Director's Council, and National Laboratories Chief Financial Officers group in support of DOE-wide efforts to improve financial operations and information.

JSA met the FY 2012 Office of Management and Budget Circular A-123, Appendix A requirements. Financial attestation letters were submitted timely and reflected no financial management internal control weaknesses. The annual management representation letter needed to support DOE's audit of the 2012 consolidated financial statements was provided in a timely manner. The DOE Office of Inspector General issued their report on "Audit Coverage of Cost Allowability for Jefferson Science Associates, LLC, Under Department of Energy Contract Number DE-AC05-06OR23177 During Fiscal Years 2006-2010." There were no findings requiring corrective action.

6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System(s)

The FY 2012 Procurement Balanced Score Card (BSC) total score was 96.6% points out of a possible 100 points, which utilizes the Department's Core performance Measures as the basis of the assessment. The targets under the various BSC performance metrics are based on national (and/or negotiated) targets issued by the Department's Office of Procurement Assistance Management. A score of 96.6% was a challenge given the large influx of dollars and requirements related to the various construction projects. A Procurement Evaluation and Reengineering Team (PERT) review was conducted on the Procurement Division on August 28-30, 2012, and the Laboratory received an "acceptable" or above rating in all of the nine required purchasing system basic tenets. The Laboratory exceeded the Small Business, Women-owned and Disadvantaged small business subcontracting goals and missed their Service Disabled and HubZone subcontracting goals. FY 2012 was a challenging year given the impact of the various construction projects/large business responsibilities. The Laboratory continued to demonstrate an effective small business outreach program and has continued to work with its Mentor Protégé company to advance their overall growth potential.

6.3: Provide an Efficient, Effective, and Responsive Property Management System(s)

Notable Outcome: Based on the site property survey conducted in FY 2011, develop and implement a disposal plan for unneeded property.

Notable Outcome Comments: The Department has determined that the performance on this Notable Outcome met expectations.

As a result of the FY 2011 survey, the Laboratory recycled/disposed of 132K pounds of unneeded material. In addition to the material identified in the notable outcome, the Laboratory identified and recycled an additional 348K pounds of metals in FY 2012 for a total of 480K pounds. The effort to reduce space and dispose of unneeded property will continue into FY 2013.

General Comments:

The Laboratory completed the notable outcome and administered the property management system in such a manner to meet 11 of 12 BSC target measures. The Laboratory was responsive to reporting and data call due dates and participated in the roll-out of the revised DOE personal property Order.

The FY 2012 Property BSC reflected the Laboratory meeting 11 of the 12 target measures. Results reported by the Laboratory include 100% for Internal Customer Satisfaction (Goal 80%); Inventory Accuracy – Equipment 99% (Goal 98%); Inventory Accuracy – Sensitive Property 99% (Goal 99%); Inventory Accuracy – High Risk Property 100% (Goal 100%); Recording Inventory Timely – Sensitive Property 100% (Goal 98%); Recording Inventory Timely – High Risk Property 100% (Goal 100%); Recording Inventory Timely – Accountable Equipment 100% (Goal 98%); Motor Vehicle Utilization 100% (Goal 94%); Property Utilization – Non-Motor Vehicle Assets (Goal was met as assets that were redeployed or acquired from excess were recorded on books); Review/Improve Property Management System (Goal was met as components of the property management system were evaluated by the internal auditor and several property forms automated); Property Disposal Effectiveness 100% (Goal 90%); Property Disposal Sale 72% (Goal 90% sold within 60 days).

6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program

Notable Outcome: Continue to implement recommendations from the FY10 JWISE workshop, specifically with Implicit Bias and Mentoring Training.

Notable Outcome: Continue implementation of the Laboratory's Succession Planning activities.

Notable Outcome Comments: The objective contained two Notable Outcomes and the Department has determined that the performance on these Notable Outcomes met expectations.

The Laboratory has met the first notable outcome through the following activities. The Laboratory chartered a Laboratory Diversity and Inclusion Council that represents a diverse segment of the Laboratory population. A representative from the University of Virginia presented an informational session on "Dealing with Employee Bias in the Workplace." The Laboratory hosted a speaker from the APS Speakers Bureau to give a presentation to the general Laboratory population on "Women in Physics." Mentor training was improved and two mentor seminars for postdocs were conducted for Laboratory mentors. The Laboratory continued to promote its Co-Op Program and employed three students from across the country via this program in FY 2012.

The Laboratory has met the second notable outcome through the following activities. Skill profiles for 50 critical positions identified by succession planning activities were completed and individual development plans for potential internal candidates for these positions are being developed. The Laboratory has developed a Job Task Analysis training database to track skills and monitor succession planning activity and progress.

General Comments:

Laboratory HR personnel were actively engaged throughout the year with activities such as: submitting and implementing an acceptable corrective action as a result of their Benefits Valuation submission being over the acceptable level; submitting timely salary freeze reports, and implementing revised salary and workforce restructuring contract clauses by DOE; conducting a voluntary separation program which resulted in ten employees volunteering to leave; and attending job fairs to promote the Laboratory as a premier employer of choice for Science, Technology, Engineering, Math (STEM) related careers. The HR function provided professional services and was responsive to the needs of the employees and management.

6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; Assurance System and Other Administrative Support Services as Appropriate

Internal Audit: Appropriate areas of operations based on risk or DOE interest were reviewed and reported in accordance with audit plans and DOE direction. There were two items of note in this area. First, the

JSA Internal Audit activity underwent an external quality assessment review, which was conducted by the DOE Contractors Internal Audit Directors (CIAD). The CIAD gave the JSA Internal Audit function its top rating of “generally conforms to the Standards and Code of Ethics.” One outcome of this review was that the Laboratory committed to contract with a professional audit firm to augment the existing Internal Audit staff in order to gain extra capacity and specialized skills. Secondly, the Laboratory Board of Directors took action to strengthen the reporting and independent relationship between the internal audit function and the day to day operations. As a result, the internal auditor reports directly to the Board and interactions with the Site Office are now through the Board.

Quality/Assurance System: The Laboratory’s initiative to migrate to electronic approvals for program documents and records has the potential to greatly improve the turn-around on review cycles and enhance document control. Additionally, the use of a new system to help maintain the risk-based assessment planning functions, and assessment report output is expected to enhance the Laboratory’s ability to more accurately predict risk, based on better packaging of operational history information and assessment performance over time.

The Department noted positively the quarterly collaborative reviews being conducted on random Corrective Action Tracking System (CATS) closure entries. These reviews were initiated to better understand the prevalence of questionable corrective action closures identified in prior performance periods. While these random audit activities have already resulted in feedback to some individual CATS action owners, the long-term benefit will be monitoring different types of closure shortcomings for recurrence, and then determine if improvements can be achieved more globally and systematically through mechanisms such as CATS user training and/or changes to the written issues management program.

The Laboratory is strongly encouraged to set specific goals, and manage milestones for the completion of long-standing Quality Assurance related program commitments, including, but not limited to Document Control and Software Quality Assurance. The Department believes that written policies and procedures for programs such as these should be approved and implemented for some period of time prior to formal program assessment.

Information Management: The Computer Center was recognized by DOE with a Sustainability Award for their work to ensure purchase of computer equipment that met the EPEAT bronze, silver, or gold categories. DOE requires that computers purchased at the Laboratory meet one of these categories. The Computer Center developed and implemented an “Approved Configuration” referred to as the “bundle program,” which identified the computer systems approved for Laboratory use. EPEAT compliant desktop, laptop, workstation, and monitor “bundles” were identified for three levels of users: administrative, technical, and scientist levels. This addressed the varying computer needs of staff throughout the Laboratory. Ordering of computers by credit card became prohibited, and all orders were made through the Laboratory’s electronic procurement system. Within this system, computer-related procurements were automatically relayed to the Computer Center for review and approval.

Computer code was then developed by Computer Center staff to generate an annual electronic report for EPEAT-related purchases. It now became a simple electronic query to generate the number of bronze, silver, and gold purchases. This allows the Procurement Department to determine easily and accurately EPEAT reporting data for the Pollution Prevention and Reporting Database. Analysis of the newly accessible database facilitates trending. Examples trended include increases in EPEAT gold purchases in 2009, 2010, and 2011 for monitors, desktop computers, and laptops. The trend is clearly going the way the Environmental Group and the Laboratory envisioned. For example, purchases of EPEAT gold computer monitors went from 31% in 2009 to 95% in 2011.

A new system has been deployed for electronic signatures for engineering drawings. Released into production in July, the new application for routing engineering drawings has already demonstrated significant improvement. For each of the applicable Divisions, the new routing of engineering drawings has resulted in reductions in time for signature (electronic vs. hand-written) and paper use. Cost savings have been estimated to be around \$300K.

It is noted that there has been significant enhancements in the Laboratory's E-Commerce process. Once deployed, there will be less overhead (process) for the Laboratory with this enhancement. The vendor will manage all order issues, including order and delivery follow-up, issues with order status or changes, essentially all of the administrative functions that procurement staff is handling with the current system. Benefits of the new system include real-time view of quantity in stock, visibility of volume discounts (something one cannot see with a static catalog) and information on back orders.

6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets

Several critical Work for Others/Cooperative Research and Development Agreements were entered into this fiscal year, and successfully administered. Two licenses were executed, eleven patents awarded and twenty-three invention disclosures were submitted, which related directly to the Laboratory's core competencies. The License Agreements were with BNNT, LLC (a small business) for "Boron Nitride Nanotubes" (with joint ownership between the National Institute of Aerospace, NASA and JSA) and with Ray Visions, Inc. (a small business) for Java Data Acquisition (JDAQ). In addition, there were numerous companies that requested letters of support for their Small Business Innovative Research/Small Business Technology Transfer (SBIR/STTR) proposals and there were twenty-one letters sent in response to their requests. This clearly demonstrated the Laboratory's continued commitment to the Department's Small Business and Technology Transfer Programs. Overall, the Laboratory continued to have an effective technology transfer program as evidenced by the significant number of intellectual assets generated during this period.

| Element | Letter Grade | Numerical Score | Weight | Overall Score |
|---|--------------|-----------------|--------------|---------------|
| Goal 6.0: Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s) | | | | |
| 6.1: Provide an Efficient, Effective, and Responsive Financial Management System(s) | B+ | 3.3 | 15.0% | |
| 6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System(s) | B+ | 3.4 | 15.0% | |
| 6.3: Provide an Efficient, Effective, and Responsive Property Management System(s) | B+ | 3.1 | 15.0% | |
| 6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program | B+ | 3.3 | 15.0% | |
| 6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; Assurance System and Other Administrative Support Services as Appropriate | B+ | 3.4 | 25.0% | |
| 6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets | B+ | 3.4 | 15.0% | |
| | | | Total | 3.3 |

Table 6.1. Goal 6.0 SC Program Office Performance Goal Score Development

| | | | | | | | | | | | |
|--------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 6.2. Goal 6.0 Final Letter Grade

Goal 7.0: Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs

This Goal evaluates the overall effectiveness and performance of the Contractor in planning for, delivering, and operations of Laboratory facilities and equipment needed to ensure required capabilities are present to meet today and tomorrow mission(s) and complex challenges.

The weight of this Goal is 25.0%.

The Department has assigned an overall grade of A- for this performance goal. Comments are contained within the individual objectives that follow.

7.1: Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs

Notable Outcome: Develop boiler and pressure vessel criteria for Jefferson Lab pressure vessels to support continued improvement in the pressure vessel program.

Notable Outcome: Implement the FY 2012 deliverables for the Jefferson Lab Configuration Management (CM) Program.

Notable Outcome Comments: The objective contained two Notable Outcomes and the Department has determined that the performance on these Notable Outcomes met expectations.

The Laboratory has met the first notable outcome through the following activities. The Laboratory developed a base program for the Boiler and Pressure Vessel Safety Program by the mid-year PEMP rating period, with the exception of program details on inspecting pressure relief devices. Since that time, the Laboratory has given careful consideration to developing the pressure relief device inspection program to balance practical program management (flexibility) with the importance of having a credible and robust program. The Department noted the transparency afforded by the Laboratory during the program development process, demonstrated by invitations to attend Pressure Safety Committee meetings and review and comment on various draft program documents. Benchmarking was evident throughout the Laboratory's program development, with multiple examples evident of peer information exchanges. Some program features were borrowed or tailored as a result of benchmarking, which should promote successful implementation, and help withstand peer scrutiny. Final approval of the pressure relief device inspection program documents is expected to be imminent, and the Laboratory has been given feedback by the Department on the adequacy of the progress on that program's development heretofore.

The Laboratory has met the second notable outcome through the following activities. Deliverables provided as expected include: (1) staff and management training; (2) issuance of a Laboratory-wide Configuration Management (CM) policy via the Configuration Management Governance Procedure; (3) multiple CM gap analyses; and (4) issuance of a revised CM implementation plan for FY 2013.

General Comments:

Additional noteworthy efforts for this objective include leadership in predictive maintenance and electronic maintenance management systems, cost avoidance of approximately \$1.5M in electricity demand charges, and work on the Operations Improvement Committee (OIC). The Laboratory was active in leading the brainstorming effort to identify infrastructure cost reduction programs in preparation of the July OIC workshop at Argonne National Laboratory. Ultimately, the National Laboratories' Chief Operating Officers accepted the proposed Space Optimization/Reduction initiative as a result of this effort. This initiative has the potential to provide complex wide cost savings.

7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to Support the Continuation and Growth of Laboratory Missions and Programs

Notable Outcome: Establish a baseline to meet DOE sustainability goals. The baseline would identify the current status, the gaps to meet goal, the desired timeframe and funding needed to close the gaps.

Notable Outcome Comments: The Department has determined that the performance on this Notable Outcome met expectations.

The Laboratory's Site Sustainability Plan (SSP) provided the baseline for meeting DOE sustainability goals. Additional options are being pursued beyond the baseline efforts. Discussions are ongoing with energy companies to identify breakthrough opportunities for meeting the sustainability goals while enhancing operational performance. The potential for application of an Energy Savings Performance Contract or Utility Energy Savings Contract for large scale modification to accelerator systems for major energy savings is being considered.

The Laboratory hosted a Pacific Northwest National Laboratory (PNNL) water assessment team sponsored by the Federal Energy Management Program (FEMP) to perform a water consumption study focused on the operational systems that dominate the water consumption at the Laboratory. Alternatives for supply were also included in the study. The study will help the Laboratory determine what are the best options for significantly reducing programmatic potable water consumption to meet sustainability goals and reduce operation costs. The assessment team was complimentary of the metering QA program at the Laboratory and the significant amount of water consumption data that was made available to them.

General Comments:

The Laboratory achieved CD-4a for the Technology and Engineering Development Facility (TEDF) project. The close proximity and constant interfaces with on-going operations of the Laboratory and Nuclear Physics 12 GeV Upgrade Project have made the TEDF project extremely challenging. The TEDF project is approaching 90% complete, on cost, and ahead of schedule. CD-4b is expected in October 2013 five months ahead of the baseline schedule.

The Laboratory has completed installation of the tie line and switch gear to provide redundant electrical feeds for operation of critical Central Helium Liquifier systems and other essential elements on the accelerator site. This greatly reduces the risk of cryomodule damage associated with uncontrolled warming from a loss of electric power event.

| Element | Letter Grade | Numerical Score | Weight | Overall Score |
|--|--------------|-----------------|--------------|---------------|
| Goal 7.0: Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs | | | | |
| 7.1: Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs | B+ | 3.3 | 40.0% | |
| 7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to Support the Continuation and Growth of Laboratory Missions and Programs | A- | 3.6 | 60.0% | |
| | | | Total | 3.5 |

Table 7.1. Goal 7.0 SC Program Office Performance Goal Score Development

| | | | | | | | | | | | |
|--------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 7.2. Goal 7.0 Final Letter Grade

Goal 8.0: Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems

This Goal evaluates the Contractor’s overall success in safeguarding and securing Laboratory assets that supports the mission(s) of the Laboratory in an efficient and effective manner and provides an effective emergency management program.

The weight of this Goal is 20.0%.

The Department has assigned an overall grade of B+ for this performance goal. Comments are contained within the individual objectives that follow.

8.1: Provide an Efficient and Effective Emergency Management System

The Laboratory's Emergency Manager has aggressively addressed deficiencies and instituted improvements. Significant achievements include closing the remaining nine emergency management issues identified from the October 2011 CEBAF accelerator magnet fire, closure of the findings from the 2010 DOE assessment, confirmation that the Laboratory is an operational emergency “base” program via DOE approval of the site-wide hazards survey, and tornado response improvements. However, it is noted that the October 2011 CEBAF accelerator magnet fire revealed multiple significant and/or repeat issues.

8.2: Provide an Efficient and Effective System for Cyber-Security and National Security Systems (NSS)

There were no root level compromises on managed systems or attacks emanating from the Laboratory on external systems. During the fiscal year, the Department validated statistics through a mixture of walkthroughs, screen observations, reports, and interviews with staff from the Chief Information Officer to administrators. The percent of scanned machines with severe vulnerabilities was an impressive 0.98%. Number of working days to remediate systems identified by intrusion detection was 1.2 days for first quarter, 1.1 days for second quarter, and 1.0 days in the third quarter. The use of Virtual Machine aided in the movement to Windows Server 2008 and upgrades to print servers. Enhancements to the network asset management system were made to centrally manage device blocking capabilities on the network. The enhancements integrate the functionality of the systems used by the networking group, helpdesk, and the cyber security group into one tool. The result is better management of network access, streamlined processes for implementing blocks, better customer service, and reduced maintenance costs.

The Laboratory made plans to conduct a white-hat exercise to gain more in-depth knowledge on its current posture. This is being conducted in order to test the feasibility of penetrating and exploiting Laboratory systems both internally and externally. This will also serve as good preparation for an upcoming Office of Health, Safety and Security penetration test scheduled for the second quarter in FY 2013.

The Laboratory initiated and maintained critical relationships this period; particular noteworthy was the continued participation as the SC representative in the JC3 Integrated Project Team. Participation allows enhancement of JC3’s ability to better coordinate cyber operations across the DOE enterprise and to perform incident response, information sharing, and reporting. In addition, the Laboratory began working with DOE, SC and JC3 for providing additional email and Domain Name System (DNS) filtering using the DEX service, and also working with DOE, SC, JC3 (NNSA IARC) to set up for providing 24x7 monitoring for network intrusions at the Laboratory’s perimeter.

The constant moving target of cyber security presents constant challenges. Zero-day vulnerabilities are increasing and social engineering attacks are becoming targeted. There will be continuing pressure to defend against nation-wide vulnerabilities that have no vendor patch. Another challenge is the fact that Microsoft Windows logs are inherently complex and lengthy. Leveraging expertise from other Laboratories and exchange of threat information will continue to be key components in cyber defense. There is evidence that the overall cyber posture is adequate based on privilege separation, restricted inbound/outbound internet access, the current architecture, and constant collaboration with the DOE cyber community. Most important to note is there is no evidence to indicate that the overall cyber security program is negatively impacting the production of science at the Laboratory.

8.3: Provide an Efficient and Effective System for the Physical Security and Protection of Special Nuclear Materials, Classified Matter, and Property

During FY 2012 the Laboratory has maintained compliance with the approved Nuclear Material Control and Accountability Program. The Laboratory provided the End-of-Fiscal Year 2011 Nuclear Material Inventory Assessment (NMIA) as required. Quarterly nuclear materials reports were provided for the Nuclear Materials Management and Safeguards System.

The Laboratory demonstrated initiative in the area of export control by sharing lessons learned with other facilities at the Export Control Coordinators Organization training conference at the Idaho National Laboratory. The installation of a USAccess Light Credentialing Station for HSPD-12 badge processing and obtaining certification for operation by the General Services Administration is also noteworthy.

Other significant actions include improvements in traffic control through the use of trailer mounted radar systems for speed control, improvement of procedures for testing of silent alarm duress systems response, development of a template for increased physical security procedures, and training to qualify off-duty Newport News police officers in support of increased physical security needs. Security for the Laboratory Open House held in May with an attendance of 7,000 people was handled effectively integrating public safety, event management, and Laboratory resources for an incident free event.

8.4: Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information

There were no reportable events involving loss of the Laboratory’s Business Sensitive/Personnel Sensitive information during this performance period. Social networking attempts continued to increase which included phishing. These attacks have increased in quality and are more targeted. Social networking sites such as Twitter and Facebook continue to be increasingly popular. These sites can act as a major source of files which can affect vulnerable systems.

For defense measures, the Laboratory prototyped a separate Windows domain for users that work with the FEL and sensitive technology so that their user accounts from the core Windows domain cannot be used to access the Free Electron Laser (FEL) enclave. In addition, the Laboratory is working with DOE, CS, and JC3 to obtain Encase tools for additional cyber security monitoring and forensics capabilities.

| Element | Letter Grade | Numerical Score | Weight | Overall Score |
|--|--------------|-----------------|--------|---------------|
| Goal 8.0: Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems | | | | |
| 8.1: Provide an Efficient and Effective Emergency Management System | B+ | 3.1 | 25.0% | |
| 8.2: Provide an Efficient and Effective System for Cyber-Security and National Security Systems (NSS) | B+ | 3.3 | 50.0% | |
| 8.3: Provide an Efficient and Effective | B+ | 3.3 | 10.0% | |

| | | | | |
|---|----|-----|--------------|-----|
| System for the Physical Security and Protection of Special Nuclear Materials, Classified Matter, and Property | | | | |
| 8.4: Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information | B+ | 3.3 | 15.0% | |
| | | | Total | 3.3 |

Table 8.1. Goal 8.0 SC Program Office Performance Goal Score Development

| | | | | | | | | | | | |
|--------------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Score | 0-0.7 | 0.8-1.0 | 1.1-1.7 | 1.8-2.0 | 2.1-2.4 | 2.5-2.7 | 2.8-3.0 | 3.1-3.4 | 3.5-3.7 | 3.8-4.0 | 4.1-4.3 |
| Grade | F | D | C- | C | C+ | B- | B | B+ | A- | A | A+ |

Table 8.2. Goal 8.0 Final Letter Grade

APPENDIX

List of programs:

Nuclear Physics (NP)

Biological and Environmental Research (BER)

**Nuclear Physics
Thomas Jefferson National Accelerator Facility
FY 2012 Performance Evaluation
Office of Science**

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 40.00%

Score: 3.7 **Grade:** A-

Goal Evaluation:

The scores and grades for performance goals 1.0-3.0 are based on the 2012 TJNAF Science and Technology Review, the 2012 TJNAF Theory Group Continuation Progress Report, communication to NP at the February Laboratory Managers' Briefings, and Supplemental Information, biweekly teleconferences, regular one-on-one discussions with the Laboratory Director, and NP program managers' site visits, their observations at national meetings, and their judgment.

- Researchers conducted experiments that provide high impact on the field of nuclear physics: exploration of the EMC Effect; of the existence of neutrons skins; of electric and magnetic form factors, of the weak charge of the proton and electroweak properties of nature. The Laboratory developed a dedicated computer cluster with ARRA funds that incorporates graphic processor units (GPUs) to apply to lattice quantum chromodynamics (LQCD) calculations, which has increased the computing power available to US users for LQCD applications by over a factor of five at a relatively modest cost. This GPU cluster is being used for extensive calculations of various properties of hadrons that will be investigated experimentally at TJNAF during the 12 GeV era.
- Theorists have calculated hadronic corrections to the muon magnetic moment with two flavors, while experiments are reaching an accuracy sufficient for four-flavor calculations in progress to determine whether beyond-the-standard-model physics contributes.
- The Laboratory provided leadership in the topics of medium energy through meetings and workshops; serves in organizational roles for national and international conferences, meetings, and workshops.
- The SRF and cryogenic groups are recognized for their expertise world-wide. CASA research is internationally respected.
- The Laboratory staff and facilities provided a sustained level of peer-reviewed journal papers, patents and patent disclosures, and invited talks.

Objective 1.1: Provide Science and Technology Results with Meaningful Impact on the Field

Weight: 50.00%

Score: 3.7 **Grade:** A-

Objective Evaluation:

Notable Outcome: Effectively execute the remainder of 6 GeV experimental program to obtain publishable scientific results.

Notable Outcome Comments: The Department has determined that the performance on this Notable Outcome met expectations.

The TJNAF team successfully executed the remainder of the 6 GeV experimental program prior to

a prolonged planned shutdown period for installation of the 12 GeV Upgrade project. Laboratory management and the project team also effectively communicated with NP such that convergence on a transition plan of staff from the project to the facility operations was achieved.

General Comments:

Some recent publications from the 6 GeV program include “The Jefferson Lab Frozen Spin Target” (Nuclear Instruments and Methods in Physics Research, Section A, Vol. 684) and “Density Measurement through Elastic Electron Scattering with a Gaseous Target at the Jefferson Lab” (Chinese Physics C, Vol. 36, Issue 7). Two experiments that involved major installations have been completed in Hall C: The HKS experiment and the Q_{weak} experiment. The Q_{weak} data should provide the most precise measurement of the electroweak Weinberg angle below the mass of the Z boson. This first precise measurement of the weak charge of the proton will provide insight into the Standard Model and may also help in providing predictions of heavy particles, such as those that may be produced by the Large Hadron Collider at CERN in Europe.

Successes in Hall A work include the observation by the PREX experiment of an extended neutron distribution in ^{208}Pb predicted by nuclear theory, sensitive measurements of parity violation in electron scattering, and the conclusion by the HAPPEX-III experiment that strange quarks make a surprisingly small contribution to the electromagnetic couplings of nucleon.

At Hall B, researchers using the CLAS detector have announced important results regarding higher mass versions of the neutron and proton, known as N^* baryon resonances. Many N^* s are predicted theoretically by the quark model and by lattice QCD, but experimental evidence has been lacking for some of these higher mass states, known as “missing N^* resonances.” A restricted “diquark” model suggested that these states might actually **not** exist. The new CLAS study has ended this controversy by discovering experimental evidence for five previously unknown N^* resonances, including some of the “missing” states.

Hall D staff is involved with the development of the future research program on the photoproduction of hadrons with gluonic excitations, including exotic mesons, along with the instrumentation and analysis software that will be required.

A dedicated computer cluster using graphic processor units (GPUs) that was supported with ARRA funding is seeing extensive use in generating lattice QCD predictions of the properties of excited mesons and baryons, including the exotic mesons that are the central goal of the Hall D (Glue-X) program. This GPU facility is having a strong impact on the field, providing more than a five-fold increase in the computer power available to the US LQCD community for these types of calculations.

Lattice QCD theorists continued their exploration of meson and baryon spectroscopy (including exotic states) with lighter and lighter pion masses, with their final goal being to predict hadron properties at the physical pion mass. A new LQCD filtering technique has been developed which allows the determination of the quark composition of mesons; this technique has been applied to conventional and exotic mesons. Work has been initiated on using LQCD techniques to predict the strong decay widths and branching fractions of higher mass hadrons, including exotics. These studies are providing crucial information regarding the optimum decay channels for future searches for these exotic mesons in Hall B (CLAS12) and the new Hall D (GlueX).

The Laboratory continues to support a core competency in Superconducting Radiofrequency expertise, which is important to the NP mission and other DOE and global initiatives, setting new world records in terms of superconducting cavity performance. The Laboratory also continues to support a core competency in cryogenics which has an impact on other NP and international

facilities. It is particularly noted that the Laboratory is applying its core competency in SRF and cryogenics through WFO participation in the NP funded construction of the Facility for Rare Isotope Beams at Michigan State University.

Three staff members from TJNAF were named as American Physicals Society Fellows by the Division of Nuclear Physics in the past year: Harut Avagyan, Rolf Ent and Robert Edwards.

The Physics Division has a sustained publication and reporting output that is well-aligned with the NP program. The staff reports peer-reviewed publications in leading physics journals as follows: Medium Energy – 38 (facility – 7); Nuclear Theory – 35 (facility – 12); Accelerator Physics – 16 (facility – 1); and Free Electron Lasers – 6. Invited talks are reported as follows: Medium Energy – 52; Nuclear Theory – 105; Accelerator Physics – 3; Engineering - 1; Education – 2; and Free Electron Lasers – 7; and 12 GeV - 2. These are reported as follows: Medium Energy (facility) 7 and Accelerator Physics (facility) 1.

Eleven U.S. Patents were granted to TJNAF staff, and 23 additional patent disclosures were made.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 50.00%

Score: 3.6

Grade: A-

Objective Evaluation:

The Hall A senior staff is well-integrated into the highest priority physics topics in electromagnetic and electroweak physics and precision QCD tests. Laboratory staff members are playing a leading role in the community in developing upgrade plans for the instrumentation in Hall A to enable a Day-1 physics program in the 12 GeV era. Working with the community, the Laboratory has developed the design of the Super BigBite Spectrometer (SBS), a Day-1 instrument in Hall A that had not previously been planned for as part of the 12Gev Upgrade project, and is to be funded out of the Laboratory capital equipment base. Following an initially unsuccessful project review, project plans were revised and the project was approved to proceed to fabrication, which is expected to commence in FY 2013.

A novel approach and innovative solution to LQCD calculations has been developed at TJNAF; this is the use of GPU processors, in which TJNAF has provided effective and successful leadership. This choice of architecture was initially considered to be a novel and somewhat risky decision. However the use of GPUs in LQCD calculations has been vindicated by the impressive performance of the GPU cluster assembled at TJNAF; this facility is now being extensively used by TJNAF theorists to predict properties of hadrons that will be investigated at TJNAF in experiments to be carried out in the 12 GeV era have now delivered the projected 180 Tflop-years and continues to perform excellently.

The community recognizes members of the TJNAF Superconducting Radio-Frequency (SRF) and cryogenics groups as world-class. An MOU was signed with MSU that details the involvement of these two groups in FRIB. The Laboratory concluded that cryogenics development for the 12 GeV were also applicable to the FRIB, saving the FRIB project significant investment. Most recently, the cryogenics developed at TJNAF have had a significant impact on the NASA program James Webb Telescope test stand. The results for high Q_0 cavity development are impressive and setting new world records in performance.

The Center for Advanced Study of Accelerators (CASA) performs valuable R&D in beam physics, particularly in areas such as the Energy Recovery Linac (ERL), instabilities, space charge in sources, Coherent Synchrotron Radiation (CSR), beam-beam forces, and linac dynamics. This research is internationally recognized. CASA members are also engaged in R&D directed towards an Electron Ion Collider focusing on a specific concept based on a figure-8 ring-ring design that relaxes the demanding requirements on high current polarized electron source and the electron linac. They are playing a lead role with the community in developing this design.

TJNAF has a broad outreach program with excellent K-12 activities. Its contributions in this area were recognized by a Secretarial Excellence award for members of the TJNAF staff. The Physics Fest (a two-hour field trip highlighting cryogenics demonstrations and career opportunities) allowed ~4500 students to come to the Laboratory in FY 2012.

The Laboratory reported training opportunities for young scientists: Undergraduate Students – 45; Graduate Students – 109; Postdoctoral Associates – 42.

The Laboratory staff has been recognized with approximately 6 awards in 2012 and 4 APS fellowships; several of these were awarded to junior staff members, and others that were international in nature.

Eight workshops were hosted and organized by TJNAF staff. TJNAF participated actively as organizers, advisors and session organizers for many international conferences and workshops. Staff participates on advisory committees to other facilities and the federal government.

Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities

Weight: 40.00%

Score: 3.6 **Grade:** A-

Goal Evaluation:

- The 12 GeV CEBAF Upgrade Project is making very good progress in regards to the accelerator scope of work.
- The Laboratory responded effectively to the reduced FY 2012 Appropriations and is actively working to address the performance baseline changes resulting from the directed change.
- The project team, with TJNAF Director engagement, is actively managing high risk aspects of the project, including the superconducting magnets in Hall B and Hall C.
- Reliable beam performance at the Continuous Electron Beam Accelerator Facility was provided to successfully complete the planned experiments in the 6 GeV program.

Objective 2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)

Weight: 45.00%

Score: 3.4 **Grade:** B+

Objective Evaluation:

Progress on the 12 GeV construction project in FY 2012 was slowed, caused by a 24% reduction of appropriated funds. In addition, the risks associated with the procurement of numerous superconducting magnets in Hall B and Hall C have been elevated to high as a result of cancelled

contracts, cost increases, and schedule delays due to poor subcontractor performance. These challenges were unforeseen and backup plans had to be developed in FY 2012 that are still evolving. In contrast, the upgrade effort on the accelerator scope continues to progress very well. The reduction in funding caused the project to slow the accelerator upgrade efforts during its long shutdown, causing a reduction in schedule contingency for CD-4A. As of July 2012, the DOE-held cost contingency is considered low at \$16.8 million (23.5% ETCob/17.3% ETCosted) due to the delayed work associated with the reduced funding and ongoing issues with the superconducting magnets. The Project maintains 6 months of schedule contingency (down from 12 months) prior to CD-4A, which is scheduled for December 31, 2014; and the Project currently has 0 months of schedule contingency prior to CD-4B, which is scheduled for June 30, 2015.

Accelerator Systems progress is very good in light of the funding reduction that has extended the long shutdown period. In FY 2012 to date, the Project installed two additional C100 cryomodules and associated systems (e.g., klystrons, LLRF, controls) (total of four). In-tunnel checkout was performed on the newly installed cryomodules, which achieved their performance requirements. Two additional cryomodules are ready for installation, with the remaining either waiting testing or assembly completion.

In FY 2012, Civil/Conventional Facilities are essentially complete (94%) and occupied. Air conditioning installation work in the tunnel, which was delayed due to the funding reduction, remains and will be accomplished in the future.

The 12 GeV Project continues to provide excellent safety oversight of construction activities.

The Project is actively reworking its risks in light of the funding reductions and superconducting magnet issues. Detailed schedules are being developed to move work forward. In addition to these risks, two ongoing High risks continue: Hall B Silicon Vertex Tracker (SVT) – with both potential cost increase and schedule impact; and the Hall D Solenoid Superconducting (SC) Magnet refurbishment – with potential schedule impact. The project in general has also experienced some modest cost growth which has absorbed flexibility afforded by the contributions from the Commonwealth of Virginia.

Objective 2.3: Provide Efficient and Effective Operation of Facilities

Weight: 40.00%

Score: 3.7

Grade: A-

Objective Evaluation:

The CEBAF facility reached the impressive completion of its 18 year CEBAF program. The initial program was based on 4 GeV beam operation, but the final performance was pushed to 6 GeV beam energies thanks to the high performance of the SRF system.

The CEBAF facility exceeded its reliability goal with an end of year reliability of 90%. The average effective beam delivered in the experimental halls of 72% (Hall A), 82% (Hall B) and 131% (Hall C) with the three hall average of 95% exceeding the goal of 80% in the 3 halls. The machine delivered 96% of the 4090 hours originally planned.

The simultaneous delivery of a controlled 23 pA to Hall B while delivering 180 mA to Hall C is a significant technical achievement. The accelerator staff performed a heroic effort in meeting the needs of the highest priority experiments during the last year of the CEBAF 6 GeV operations.

Accelerator Scientists developed pre-conceptual technical options for an electron ion collider.

Objective 2.4: Utilization of Facility(ies) to Provide Impactful S&T Results and Benefits to External User Communities

Weight: 15.00%

Score: 3.6 **Grade:** A-

Objective Evaluation:

The Laboratory has been exploring new opportunities for research including dark photon searches at both the free electron laser and CEBAF, in which both nuclear physicists and high energy physicists are interested. The Laboratory also continues to increase interest in the 12 GeV program and works with domestic and international research institutions in detector development and the refinement of a day one physics program.

The User Group is generally pleased with their interactions with the Laboratory. Laboratory management interactions with the user organization were effective. The User Group noted a number of user concerns of which they are addressing with the Laboratory, such as data transfer, user space and health insurance. The topic of computing and data exchange was identified as an area which required additional management attention. JSA support of the User Group has a positive impact on their productivity. The CEBAF operation team is responsive to the user community.

The Laboratory does an excellent job in attracting outside sources of funding on a work-for-others (WFO) basis. WFO activities, primarily in accelerator R&D and the DOD-supported FEL efforts, approached a total of ~\$5M in FY 2012.

Accelerator technology development from TJNAF, primarily in the area of cryogenics has had recent positive impacts on the NASA program and the NP FRIB project. Efforts are also underway to collaborate with new international partners in terms of SRF development, such as India and China. The Laboratory has increased its efforts in working with the community to develop a scientific case for the proposed EIC and has also made substantial progress in developing a pre-conceptual design for its version of the EIC.

Goal 3.0: Provide Effective and Efficient Science and Technology Program Management

Weight: 20.00%

Score: 3.7 **Grade:** A-

Goal Evaluation:

- TJNAF has an articulated mission statement, vision, and 5-year strategic plan; the management engages a variety of external and internal groups for guidance to set strategic scientific goals.
- The TJNAF scientific goals are well aligned with those of the nuclear physics program. Work-for-others projects exploit and support core competencies that are a resource for other DOE laboratories.
- The Laboratory effectively managed the completion of the 6 GeV experimental program while building the 12 GeV CEBAF Upgrade Project.
- The TJNAF Theory Group is working effectively, within current funding limitations, to elevate its activities, including the activities of the former Excited Baryon Analysis Center, into a TJNAF Physics Analysis Center. In response to an S&T Review recommendation, a plan is being developed for the role of the Theory Group in the 12 GeV era.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 40.00%

Score: 3.7

Grade: A-

Objective Evaluation:

Notable Outcome: Develop and disseminate a "white paper" documenting the scientific case for an electron-ion collider.

Notable Outcome Comments: The Department has determined that the performance on this Notable Outcome met expectations.

Laboratory management have done an outstanding job in working with the community to further the development of a scientific and technical plan for the proposed Electron Ion Collider.

General Comments:

RHIC and TJNAF jointly appointed a Steering Committee representing 16 different international institutions to develop the EIC Science White Paper. A draft of the 12-page Executive Summary of the White Paper was posted (e.g., see <http://www.bnl.gov/npp/docs/EICWP-ExSum-Tribble.pdf>) in mid-August 2012 for consideration and discussion at the POETIC 2012 Workshop held in Bloomington, Indiana August 20-22, 2012. After modifications incorporating feedback, it was delivered to all members of the Tribble NSAC Subpanel. A full draft of the White Paper was available as of October 1, 2012 and was posted for comment by a wide audience of nuclear physicists, at both TJNAF and BNL websites. The draft will also be open for feedback at the DNP Town Meetings on October 25-26, 2012. The final full EIC Science White Paper will be available to NSAC members and the nuclear science community by the end of November 2012.

In addition, a summary of the EIC science case was published by TJNAF scientists: "Nuclear physics with a Medium-energy Electron-Ion Collider," A. Accardi, V. Guzey, A. Prokudin and C. Weiss, *Eur. Phys. J. A* (2012) 48: 92. To further support and document the accelerator and fully integrated detector and interaction region of TJNAF's EIC design, as summarized in the white paper, a pre-conceptual zero'th order design report has been prepared for publication and is posted on the arxiv.

The Laboratory has been working effectively aggressively with the community to identify future instrumentation capabilities for the 12 GeV machine. These initiatives represent substantial investments for which funding sources have not yet been identified. While the management's vision is applauded, it will be necessary to consider these new initiatives in the context of competing resources and constrained budgets.

The Director has strengthened the leadership team including a number of very strong hires from outside the Laboratory. The expertise and leadership of these individuals seem to have had a positive impact on the Laboratory staff and community.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 35.00%

Score: 3.7

Grade: A-

Objective Evaluation:

The Laboratory did an outstanding job in implementing the last year of the 6 GeV program while executing the 12 GeV Upgrade Project, all within times of fiscal constraints and uncertainty within the national program. Laboratory management responded swiftly and effectively to a directed change which impacted the 12 GeV project. A strong WFO component exists at the Laboratory which is leveraged off of the NP program and also benefits the NP program.

Management has nurtured important core competencies which benefit the internal NP program as well as other NP efforts and DOE missions. A strong applications program is supported in medical instrumentation.

The ARRA AIP project is on track, although the availability of resources has forced a decision to select a normal conducting over a superconducting device in order to maintain schedule.

The SBS capital equipment project is commencing and will also require attention to maintain cost and schedule performance.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 25.00%

Score: 3.5

Grade: A-

Objective Evaluation:

Laboratory management is responsive to Program needs and requests. Communications with TJNAF management occur via bi-weekly phone conferences, and periodic face-to-face meetings at the upper management level. Interactions between the Program and Laboratory management have been strengthened and improved communications are noted. Communications at the Program Manager level should continue to improve.

The Laboratory did an excellent job in providing the necessary input to the Program such that convergence was reached regarding funding levels for the transition of the CEBAF operations from the 12 GeV project to full operations.

In regards to ongoing issues with the superconducting magnets, communication with the TJNAF project and senior management has been open and responsive, showing strong effort in working towards mitigating these ongoing issues. Senior management is being proactive in addressing risks associated with equipment projects for the 12 GeV project.

**Biological and Environmental Research
Thomas Jefferson National Accelerator Facility
FY 2012 Performance Evaluation
Office of Science**

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

Weight: 75.00%

Score: 3.1 **Grade:** B+

Goal Evaluation:

- The Laboratory Radionuclide Imaging SFA continues to make progress in the design and development of systems for plant imaging.

Objective 1.1: Provide Science and Technology Results with Meaningful Impact on the Field

Weight: 60.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

TJNAF has provided excellent mission accomplishments during the past year. This includes their successful research to develop a plant imaging system for plant biologists who are working on the development of biofuels - a major mission goal for BER.

Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

Weight: 40.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

TJNAF has provided excellent management of their radiochemistry/instrumentation SFA. This was effectively demonstrated by their on-time submission of the SFA renewal package and their positive comments from experts who reviewed their SFA proposal. In addition, the Laboratory has met all scientific milestones even though funding is less than optimal for their proposed research goals.

Goal 3.0: Provide Effective and Efficient Science and Technology Program Management

Weight: 25.00%

Score: 3.1 **Grade:** B+

Goal Evaluation:

- TJNAF continues to be effective in managing limited resources by leveraging expertise and resources within the lab to accomplish their goals.

Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision

Weight: 20.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

The SFA renewal package received positive comment from experts who reviewed their proposal.

Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management

Weight: 30.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

TJNAF management has leveraged the physical science assets at the Laboratory to develop new imaging capabilities for plant biology.

Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs

Weight: 50.00%

Score: 3.1 **Grade:** B+

Objective Evaluation:

TJNAF management of the SFA has been responsive to HQ in regards to the timely delivery of responses to the feedback stemming from the FY2012 triennial review.