

**U.S. Department of Energy**

**Office of Laboratory Policy**

**Fiscal Year 2023**

**Performance Evaluation Report of the**

**Jefferson Science Associates, LLC for**

**Management and Operations of Science and Technology**

**at the**

**Thomas Jefferson National Accelerator Facility (TJNAF)**

**For the period October 1, 2022 to September 30, 2023**



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## 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 2023 centered on the Objectives found within the following Performance Goals:

Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

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

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

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

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

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

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

Goal 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).

<b>Score</b>	<b>0.0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Figure 1. FY 2023 Contractor Letter Grade Scale**

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

<b>Performance Goal</b>	<b>Grade</b>
1.0 Mission Accomplishment	A-
2.0 Design, Fabrication, Construction and Operations of Research Facilities	B+
3.0 S&T Program Management	A-
4.0 Leadership/Stewardship	B+
5.0 ES&H and Environmental Management	B
6.0 Business Systems	B+
7.0 Infrastructure	B
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).

<b>Program</b>	<b>Numerical Score</b>	<b>Weight</b>	<b>Total Score</b>
1.0 Mission Accomplishment	3.7	30.0%	
2.0 Design, Fabrication, Construction and Operations of Research Facilities	3.2	45.0%	
3.0 S&T Program Management	3.6	25.0%	
<b>Initial S&amp;T Score</b>			<b>3.4</b>

Summation of percentages may not always add up to 100% due to rounding.

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

For Goals 1.0 and 2.0, the weights are based on fiscal year costs for each program distributed between Goals 1.0 and 2.0. For Goal 3.0, the weight is set as a fixed percentage of 25% for all laboratories.

M&O Performance Goal	Numerical Score	Weight	Total Score
5.0 ES&H and Environmental Management	3.0	30.0%	
6.0 Business Systems	3.4	25.0%	
7.0 Infrastructure	3.0	25.0%	
8.0 Safeguards/Security	3.4	20.0%	
Initial M&O Score			3.2

Summation of percentages may not always add up to 100% due to rounding.

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

*While tables within the executive summary report show scores rounded at the goal level, in calculating the S&T and M&O scores all decimal places are carried over until the final 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	Total Score
Initial S&T Score	3.4	75%	
Leadership/Stewardship	3.1	25%	
Final S&T Score			3.3
Initial M&O Score	3.2	75%	
Leadership/Stewardship	3.1	25%	
Final M&O Score			3.2

Summation of percentages may not always add up to 100% due to rounding.

**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 2023 is then calculated AS shown in Table E.

Overall Weighted Score from Table C	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.	91.00%
M&O Fee Multiplier from Figure 3.	X 100.00%
Overall Earned Performance-Based Fee	91.00%

**Table D. Final Percentage of Performance Based Fee Earned Determination**

Earned Fee Calculation	
Available Fee	\$3,345,296
Overall Earned Performance - Based Fee (Table D)	X 91.00%
Earned Fee	\$3,044,219.36

**Table E. Earned Fee Calculation**

## II. PERFORMANCE GOALS, OBJECTIVES, AND MEASURES/TARGETS

### Goal 1.0 Provide for Efficient and Effective Mission Accomplishment

*The science and technology programs at the Laboratory produce high-quality, original, and creative results that advance science and technology; demonstrate sustained scientific progress and impact; receive appropriate external recognition of accomplishments; and contribute to overall research and development goals of the Department and its customers.*

#### SC Accelerator R&D and Production (ARDAP)

TJNAF efforts in ARDAP programs to develop industrial SRF accelerators, advance high-efficiency magnetron-based RF power sources, and advance material science for both SRF cavities and megawatt-class beam windows is innovative and outstanding. Engagement with industry has been strong and will serve as a positive model for lab-industrial technology transfer.

#### SC Nuclear Physics (NP)

TJNAF is the world's leading hadron physics facility making impressive contributions to our understanding of the nuclear force and nuclear structure.

TJNAF has an outstanding record of scientific and technical accomplishments in the 12 GeV era. TJNAF continues to provide effective and efficient support to its scientific program, and to high priority current and future experiments.

TJNAF management and staff have significant leadership on the development and construction of the Electron-Ion Collider (EIC) and its baseline ePIC detector. The partnership with BNL is highly effective and cooperative.

The TJNAF theory group continues its contributions with the publication of significant science results. TJNAF continues to have very significant impact by providing mid-range high performance computing (HPC) resources to the US lattice quantum chromodynamics (QCD) community. TJNAF staff are making seminal contributions to artificial Intelligence and machine learning (AI/ML) algorithms for experiments and for accelerator reliability.

#### SC Workforce Development for Teachers and Scientists (WDTS)

The Laboratory executes WDTS sponsored programs in support of the SC/DOE STEM workforce mission in manners that barely meet expectations, with areas of improvement.

Compared to past year, the participation in all WDTS programs has shown decrease (SULI, CCI, and no VFP), perhaps relating to a challenging transition phase from COVID period. This has put the overall participation in WDTS DOE lab-based training programs (SULI/CCI/VFP/SCGSR) at TJNAF at the lowest compared to that at other SC laboratories.

The Laboratory has yet to form a focused outreach strategy to recruit applicants to WDTS-sponsored programs. The Laboratory is encouraged to make an intentional effort to raise awareness of its research

and technical training opportunities to a broader audience and potential applicants, including those at the user facilities, and attract more applicants into the programs.

**Notable Outcome(s)**

SC Nuclear Physics

(Objective 1.2) Notable Outcome: Develop a strategy for the upgrade of the lattice quantum chromodynamics (QCD) cluster at TJNAF in time for it to be considered during the USQCD review.

*Outcome:* The Lattice QCD group at TJNAF presented a preliminary FY 2025-2029 five-year strategic plan for NP Lattice QCD Initiative in time for the 2023 Annual USQCD Review. - **Achieved**

Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
SC Accelerator R&D and Production				
1.1 Efficient Strategic Planning and Stewardship	A-	3.5	50.0%	
1.2 Leadership	B+	3.4	50.0%	
Overall ARDAP Total				3.5
SC Nuclear Physics				
1.1 Efficient Strategic Planning and Stewardship	A-	3.7	50.0%	
1.2 Leadership	A-	3.7	50.0%	
Overall NP Total				3.7
SC Workforce Development for Teachers and Scientists				
1.1 Efficient Strategic Planning and Stewardship	B	2.8	80.0%	
1.2 Leadership	B+	3.1	20.0%	
Overall WDTS Total				2.9

**Table 1.1 Program Performance Goal 1.0 Score Development**



Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
SC Accelerator R&D and Production	A-	3.5	1.8%	
SC Nuclear Physics	A-	3.7	96.7%	
SC Workforce Development for Teachers and Scientists	B	2.9	1.5%	
Performance Goal 1 Total				3.7

**Table 1.2 Program Performance Goal 1.0 Score Development**

Score	0.0-0.7	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 Laboratory provides effective and efficient strategic planning; fabrication, construction and/or operations of Laboratory research facilities; and are responsive to the user community.*

**SC Basic Energy Sciences (BES)**

TJNAF was an excellent partner to the Proton Power Upgrade (PPU) project and an effective partner to the Linac Coherent Light Source – II – High Energy (LCLS-II-HE) project, including providing assembly, delivery, and testing of cavities and cryomodules. The Laboratory successfully completed final assembly of one cryomodule but missed qualification of two cryomodules and final assembly of a second cryomodule, resulting in a partially missed Notable Outcome. However, the Laboratory effectively mitigated the challenges experienced with LCLS-II-HE cryomodule assembly and qualification and began work to recover schedule.

**SC Nuclear Physics (NP)**

The MOLLER MIE achieved CD-3A in FY 2023 and has initiated long lead procurements, and the project is well positioned to set its performance baseline early in FY 2024.

The TJNAF EIC project team has made good progress within available funding, supporting both accelerator and detector design. The EIC team at TJNAF effectively engaged the international community to identify potential in-kind contributors.

CEBAF did not meet its performance measurement goals for FY 2023 due to an extended scheduled accelerator down time to proactively address safety. CEBAF delivered 3,306 hours, 81% of its planned hours, to its four experimental halls enabling several high-impact experiments. CEBAF continues to

make good progress on recovering its design accelerating gradient via the CEBAF Performance Plan, including successfully implementing in-plasma processing to recover gradient in its C100 cryomodules. TJNAF hosts a large nuclear physics user community, numbering nearly 1,900. TJNAF has an impressive record of community building, from scientific engagement through the TJNAF Users Organization to the education and outreach programs reaching pre-college, undergraduate, and graduate student populations and the public.

### **Notable Outcome(s)**

#### SC Basic Energy Sciences

(Objective 2.1) Notable Outcome: Effectively manage and safely execute the assigned LCLS-II-HE project scope in accordance with DOE Order 413.3B. Performance will be assessed based on the assigned project management responsibilities and cryomodule work planned and accomplished during FY 2023.

*Outcome:* TJNAF partially met this notable outcome. The Laboratory completed one of the four milestones planned for FY 2023. TJNAF completed the final assembly of its cryomodule number 3, but missed qualification of cryomodules 1 and 2, as well as the final assembly of the fourth cryomodule in part due to unavailability of the Laboratory's test facility for repairs and maintenance. TJNAF has mitigated the issues and schedule recovery is in progress. - **Achieved**

(Objective 2.2) Notable Outcome: Effectively manage and execute the assigned PPU project scope in accordance with DOE Order 413.3B to safely accomplish the planned work per the approved Performance Baseline. Performance will be assessed based on the work planned and accomplished during FY 2023.

*Outcome:* TJNAF was a highly successful partner in delivering critical components for the PPU project on schedule with only minor delays and within cost, exceeding the technical performance criteria, with no equipment failures to date. Four cryomodules (CMs) are installed in the Spallation Neutron Source tunnel and have demonstrated successful operation; the remaining three production CMs were delivered in time to support installation and will enable the performance increase needed to demonstrate the PPU threshold key performance parameters. - **Achieved**

#### SC Nuclear Physics

(Objective 2.1) Notable Outcome: Effectively manage the Electron-Ion Collider project in accordance with DOE Order 413.3B to safely deliver the project scope, including planned research and development and preliminary engineering design activities. Performance will be assessed based on the work planned and accomplished during FY 2023.

*Outcome:* TJNAF staff working together with BNL staff on the EIC project effectively managed the project in FY 2023, making good progress on the preliminary designs, and preparing to request approval for critical decision (CD)-3A, Approve Long Lead Procurement. - **Achieved**

Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
SC Basic Energy Sciences				
2.1 Support Laboratory Programs	B	3.0	50.0%	
2.2 Construction of Facilities	A-	3.7	50.0%	
Overall BES Total				3.4
SC Nuclear Physics				
2.1 Support Laboratory Programs	A-	3.6	10.0%	
2.3 Operation of Facilities	B	3.0	75.0%	
2.4 S&T Results and Benefits to External User Communities	A-	3.6	15.0%	
Overall NP Total				3.2

**Table 2.1 Program Performance Goal 2.0 Score Development**

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
SC Basic Energy Sciences	B+	3.4	4.5%	
SC Nuclear Physics	B+	3.2	95.5%	
Performance Goal 2 Total				3.2

**Table 2.2 Program Performance Goal 2.0 Score Development**

Score	0.0-0.7	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 Laboratory 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.*

#### **SC Accelerator R&D and Production (ARDAP)**

TJNAF Business Office support for proposal submission remains problematic for a third year in a row. Submitted proposals frequently lack required appendices (e.g., DMPs, PIER plans, Vitae, Current & Pending lists), conflicted reviewer lists, and Site Office letters. This has resulted in an unacceptably high administrative declination rate for TJNAF proposals.

#### **SC Nuclear Physics (NP)**

TJNAF has a well-defined strategic planning process to inform annual planning and maintain core capabilities. The Laboratory's mission is well aligned with NP's mission, and Laboratory leadership effectively communicates the strategic vision with stakeholders. The long-term plans for the medium energy and theory groups need to be better articulated.

TJNAF is an effective partner in the EIC project, with TJNAF staff filling critical project leadership positions. TJNAF is poised to deliver EIC technical scope and is actively engaged in recruiting international in-kind contributions.

The MOLLER MIE project is being effectively managed, and the transition to new project leadership went smoothly.

The Laboratory's responses to recommendations from NP reviews often lack context, attentiveness to the question at hand, and level of detail for NP to assess.

TJNAF continues to invest its LDRD funds in areas relevant to SC initiatives and the NP mission.

#### **SC Workforce Development for Teachers and Scientists (WDTS)**

The Laboratory makes effort to seek student and faculty participants for placement in hands-on learning and authentic research experience opportunities, helping ensure that DOE has a sustained, highly skilled talent pool for a future DOE science and technology workforce.

Although there are active outreach activities occur in various units, they have not led to the increase in application/participation in WDTS-sponsored programs. The Laboratory's STEM education team is encouraged to coordinate with other units, including the scientific user facilities, to develop an intentional outreach strategy to attract and recruit more applicants to WDTS programs at TJNAF.

Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
SC Accelerator R&D and Production				
3.1 Efficient Strategic Planning and Stewardship	B+	3.3	40.0%	
3.2 Project/Program/Facilities Management	C+	2.1	40.0%	
3.3 Effective Communications and Responsiveness	B+	3.3	20.0%	
Overall ARDAP Total				2.8
SC Nuclear Physics				
3.1 Efficient Strategic Planning and Stewardship	A-	3.7	30.0%	
3.2 Project/Program/Facilities Management	A-	3.6	40.0%	
3.3 Effective Communications and Responsiveness	B+	3.4	30.0%	
Overall NP Total				3.6
SC Workforce Development for Teachers and Scientists				
3.1 Efficient Strategic Planning and Stewardship	B	2.8	20.0%	
3.2 Project/Program/Facilities Management	B+	3.1	50.0%	
3.3 Effective Communications and Responsiveness	B+	3.1	30.0%	
Overall WDTS Total				3.0

**Table 3.1 Program Performance Goal 3.0 Score Development**

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
SC Accelerator R&D and Production	B	2.8	0.2%	
SC Nuclear Physics	A-	3.6	99.7%	
SC Workforce Development for Teachers and Scientists	B	3.0	0.1%	
Performance Goal 3 Total				3.6

**Table 3.2 Program Performance Goal 3.0 Score Development**

Score	0.0-0.7	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's 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.*

**Headquarters (HQ)**

TJNAF has shown strong leadership and skillful stewardship in developing a vision for the future of nuclear physics, both at the Laboratory and in the field generally, and continues to work to position itself to contribute at a greater level to SC missions as part of diversifying the science and technology (S&T) portfolio of the Laboratory.

The Laboratory continues to work diligently with Brookhaven National Laboratory to prepare for the next DOE milestones for the Electron-Ion Collider (EIC). TJNAF continues to be proactive in exploring and developing partnerships key to the success of the EIC and the future of the Laboratory and has demonstrated effective stewardship of a highly active international EIC User Group which is playing an important role in charting the future of the EIC project, especially as regards the EIC detectors.

It should be noted that the Laboratory filled critical leadership positions in FY 2023 including Chief Financial Officer, a Business and Finance Director, a Facilities Management and Logistics Director, EIC and MOLLER Project Managers, and a Chief Audit Executive.

There have been several operational and safety events and near misses that have alarmed both the Laboratory leadership and DOE. Laboratory leadership is acknowledged for taking the suite of safety and operational events as an indication of overall laboratory culture and taking impactful actions to establish a safety culture. Additionally, the Laboratory leadership is aware and working shortfalls in staffing of project management and should accelerate filling these gaps to ensure delivery of all projects within cost and on schedule.

The Laboratory material condition does not meet expectations in many areas. The Laboratory leadership is now reinvigorating its effort to inculcate "pride of the Lab" and stewardship. Some conditions of the Laboratory have been allowed to degrade for years and the Laboratory is working on improving their stewardship of the habitability, housekeeping, cleanliness, and operating environment of TJNAF which in turn will improve conditions for staff and users.

The contractor assurance system (CAS) elements are in place at varying degrees of maturity. The Laboratory is encouraged to continue monitoring and developing its CAS and communicate progress and outcomes with DOE, including critical and rigorous self-assessments and follow through on management system implementation.

The Laboratory has made contribution to workforce development in support of DOE mission. It is recommended for consideration to strongly encourage the collaboration and coordination between STEM education unit and other units, including the scientific user facilities, to develop intentional outreach strategies to broadly engage underserved institutions and increase participation in DOE research, training, and career opportunities at the Laboratory.

TJNAF has made progress in advancing its DEIA strategy and objectives over prior years in a number of areas, including continuing to engage the Laboratory community to better understand the experiences, concerns, and needs of its employees, updating and improving standard protocols aimed at advancing DEIA in its recruiting and hiring processes, and developing and launching a new Supervisor Academy Program for all TJNAF supervisors.

The Laboratory hired a Business and Portfolio Development Associate to cultivate relationships with industry in pursuit of technology commercialization to further emphasize external engagement and outreach. In addition, the Laboratory hosted several events demonstrating significant commitment to outreach including the 26th International Conference on Computing in High Energy and Nuclear Physics (CHEP2023) and in partnership with Dominion Energy Innovation Center, brought the SPARK Virginia program to Jefferson Lab focused on advancing and supporting energy innovators.

JSA awarded funding for 33 projects in the FY 2023 JSA Initiatives Fund Program, leveraging a large amount of contributing and matching funds with over two-thirds of the funds awarded supporting the Laboratory's User community.

The SURA Residence Facility continued to be a valued corporate investment, providing convenient and affordable housing for Laboratory Users.

Regarding partnerships, JSA has made significant inroads with the State of Virginia on the value of the important science and technology being developed at the Laboratory and the value of the Laboratory to the region and the State. In addition, the State of Virginia provided funding to support several Laboratory fellowships and a critical hire for the Laboratory.

The assessment for each Objective under this Goal is provided below.

#### **4.1 Leadership and Stewardship of the Laboratory**

##### **SC Nuclear Physics**

The Laboratory has shown strong leadership and skillful stewardship in developing a vision for the future of nuclear physics, both at TJNAF and in the field generally. It continues to position itself to contribute at a greater level to SC missions as part of diversifying the S&T portfolio of the Laboratory. It has shown strong leadership and stewardship in working together with BNL in preparing the EIC for the next DOE gateways, CD-2 and CD-3a. The Laboratory continues to be proactive in exploring and developing partnerships key to the success of the EIC and the future of the Laboratory and has demonstrated effective stewardship of a highly active international EIC User Group which is playing an important role in charting the future of the EIC project, especially as regards the EIC detectors. Regarding partnerships, the Laboratory has made significant inroads with the State of Virginia on the value of the important science and technology being developed at the Laboratory and the value of the Laboratory to the region and the State.

##### **SC Workforce Development for Teachers and Scientists**

The Laboratory has made efforts seeking partnerships with local communities and MSIs in support of DOE workforce development.

## Site Office

The Laboratory filled critical leadership positions in FY 2023 in support of an overall operations strategy including a Chief Financial Officer, a Business and Finance Director to lead procurement, a Facilities Management and Logistics Director, EIC and MOLLER Project Managers, and a Chief Audit Executive. The Laboratory also hosted important visits that represent critical engagements to further the mission of the Laboratory including the Director of the Office of Science.

Laboratory leadership is aware of shortfalls in staffing of project management and should accelerate filling these gaps to ensure delivery of all projects within cost and on schedule. Gaps include project director(s), project manager(s), project controls, risk analyst(s) and training for such positions.

## 4.2 Management and Operation of the Laboratory

### SC Nuclear Physics

The Laboratory's effort in support of integrating the TJNAF financial system into the SC financial system are commended. The responsiveness of the Laboratory to NP requests needs significant improvement as recent responses have not provided sufficient information for NP to properly assess. The Laboratory needs to continue to prioritize work planning and safety protocols for on-site work on CEBAF and to ensure that Laboratory staff are fully trained and strictly adhere to those protocols as the recent increase in serious near misses is very concerning. The Laboratory is commended for its continued strong support as a proponent of industrial outreach and the SBIR/STTR program. The continued delay in implementing a new electronic work planning system (ePAS) is a concern.

### SC Workforce Development for Teachers and Scientists

The Laboratory provides adequate management of WDTS programs.

### Site Office

There have been several operational and safety events and near misses that have alarmed both the Laboratory leadership and DOE. The Laboratory leadership is acknowledged for taking the suite of events as an indication of overall Laboratory culture and taking impactful actions to establish a safety culture befitting of a national Laboratory. JSA is on a quest to improve their contractor assurance implementation. DOE has shared that the contractor assurance as conducted and presented by JSA has largely focused on financial systems and issues management, both of which are important, but has lacked in the fuller breadth for providing reasonable assurance of all management systems in accordance with the H.50 clause. Laboratory leadership is not consistent with implementing thorough and rigorous self-assessments. Adequate self-assessments to accurately reflect current state is essential to ensure any improvement actions are meaningfully impactful and supportive of effective, efficient, and safe delivery of the mission.

The Laboratory material condition does not meet expectations in many areas. Some conditions of the Laboratory have been allowed to degrade for years and JSA is working on improving their stewardship of the habitability, housekeeping, cleanliness, and operating environment of TJNAF which in turn will improve conditions for staff and users. For example, attempts to deal with intrusion into experimental halls A, B and C over the years have not been fully effective and make-shift water direction and removal



systems have been put in place as a temporary turned permanent measure. The Laboratory leadership is now reinvigorating its effort to inculcate “pride of the Lab” by directing investments to this end. Leadership has ramped up some activities which will be important not only for the health and safety of the staff and users but also for recruitment and retention for the Laboratory.

JSA is acknowledged for rolling out Jefferson Lab’s Supervisory Academy (eight-hour course), which is intended to prepare new and seasoned leaders to guide highly effective, inclusive teams that safely deliver on the mission. This course is taught by Laboratory leaders, with an introduction by the Laboratory Director, to reinforce expectations for leadership in safety, inclusion, budgeting, etc., and is intended to inspire leaders by giving them a broader view of the mission. By the end of FY 2023, more than 40 supervisors from Associate Director to front-line supervisors have been through the academy. The full impact of this new program is yet to be demonstrated but JSA leadership is credited for seeing the need for such an effort.

JSA is embarking on a Digital Transformation to improve efficiency, reduce human error, and enhance system data gathering and analysis. A key outcome was for JSA to transition to an integrated contractor. JSA completed the project with an aggressive 12-month schedule by successfully teaming with federal and National Lab partners throughout DOE. This is the first time a contractor has successfully completed an integration in-contract. Other Digital transformation outcomes include:

- Implemented paperless credit card processing which has saved approximately 40 working hours per month of processing for procurement staff.
- Developed an initial process for creating, reviewing, distributing, and maintaining policies.

### **4.3 Advancing Laboratory Diversity, Equity, Inclusion and Accessibility**

#### **SC Scientific Workforce Diversity, Equity, and Inclusion**

TJNAF has made progress in advancing its DEIA strategy and objectives over prior years in a number of areas, including continuing to engage the Laboratory community to better understand the experiences, concerns, and needs of its employees, updating and improving standard protocols aimed at advancing DEIA in its recruiting and hiring processes, and developing and launching a new Supervisor Academy Program for all TJNAF supervisors.

TJNAF issued a 2023 Inclusion Survey to its employees with many similar questions to its 2020 Inclusive Survey to assess progress. The employee feedback scores in 2023 were lower than the results from the 2020 Inclusion Survey in several topical categories, suggesting that the Laboratory’s current suite of initiatives and activities are not getting to the heart of the issues and challenges that the Laboratory staff are experiencing. A more detailed analysis of the survey results by disaggregated demographics and by suborganization is needed to fully understand the lived experience of employees and to determine what focused actions are necessary to address the issues and challenges.

The response rate by users in the 2023 Inclusion Survey was quite low; the survey questions are not well tailored to the user community which is likely a factor.

TJNAF has developed a new decentralized HR staffing model to better address the increased volume in hiring anticipated while the laboratory scope undergoes an aggressive period of growth. In FY 2023, this

model took effect with HR Division Partners providing direct and increased interaction and support to division leadership and enhanced collaborative recruiting support to division hiring managers. TJNAF also introduced a new HR dashboard to provide metrics and analytics capabilities related to talent management processes, including data through a DEIA lens.

The Laboratory has moved to a centralized funding source for recruitment related outreach for jobs, which enables the Laboratory to build relationships a broader set of organizations, including minority serving scientific professional societies, to create a more diverse applicant base.

With increased growth, the Laboratory has an opportunity to broaden representation within the organization. While modest gains were made with FY 2023 hires, representation of women and underrepresented minorities in technical research staff remains low with little improvement over the past 8 years.

The Laboratory is commended for its efforts to make the Laboratory campus more accessible, both improvements to physical accessibility as well as digital accessibility.

### **SC Nuclear Physics**

TJNAF has aimed to be proactive in improving the diversity, equity, and inclusion culture of the laboratory; however, recent requests from NP to implement a harassment and discrimination survey and to inform the program on instances of Code of Conduct violations were rebuffed. TJNAF's strong leadership in outreach to k-12 and undergraduate students is commendable.

### **SC Workforce Development for Teachers and Scientists**

The Laboratory has made effort in developing diverse, highly skilled STEM talent pool in support of a future DOE workforce.

### **Site Office**

TJNAF launched its second Inclusion Survey in partnership with Culture Amp in January 2023. The goal was to gauge progress and ensure that JSA is continuing to implement initiatives that create a welcoming workplace for all. Data from the 2020 survey was used as a baseline to compare feedback, allowing for an evaluation of progress to date and discovery of new opportunities to further advance DEIA. At the conclusion of the survey, 69.4% of employees participated with 66% stating an overall feeling of Inclusion. Additionally, 17% of Users participated with 75% stating an overall feeling of Inclusion. Notably, the Laboratory committed to three initiatives aimed at improving communication and employee engagement.

Several DEIA events were held throughout the year, for example: In recognition of Black History Month, TJNAF hosted a hybrid webinar with Alexis Swan, President and CEO of TowneBank. In recognition of Women's History Month, a hybrid webinar was led by Nancy Grden, President and CEO of Reinvent Hampton Roads, on March 20th. In recognition of National Disability Employment Awareness Month (NDEAM), the Laboratory hosted a virtual webinar with Dr. Amber Kuszak, a licensed clinical psychologist. TJNAF also helped sponsor the Virginia Peninsula Chamber of Commerce Military Recognition Breakfast, which honors the troops who serve and defend our country. These events demonstrated the Laboratory's commitment to DEIA.

JSA introduced a new interactive Human Capital Dashboard to provide critical metrics to divisional leadership. The dashboard provides analytics in the areas of Demographics, Talent Acquisition, Attrition, Promotion and Appraisals through a Diversity, Equity, Inclusion and Accessibility lens in support of strategic planning and goal setting/measurement efforts.

TJNAF's communications program won several awards in FY 2023 for engaging the community during the COVID-19 pandemic, although few in-person events were held. The Laboratory developed videos to continue reaching out to our diverse community and making information about the Laboratory accessible. Three videos were produced, and each won awards locally at the Public Relations Society of America (PRSA) Hampton Roads Chapter Awards Ceremony and nationally at the PRSA National Awards ceremony in New York.

As one of three laboratories selected in FY 2023, TJNAF hosted a DOE led diversity, equity, inclusion, and access (DEIA) Peer Review in the fourth quarter, with a focus on assessing the DEIA program, progress, and leadership engagement. JSA will evaluate feedback from the Peer Review and identify actionable areas that can enhance the Laboratory's DEIA program.

#### **4.4 Leadership of External Engagements and Partnerships**

##### **SC Nuclear Physics**

TJNAF continues to provide leadership and insightful stewardship in establishing a vision for developing technology transfer activities and meaningful partnerships in support of DOE missions. Of note are recent changes in the contractor corporate structure to strengthen contractor capabilities to achieve DOE goals.

##### **Site Office**

In the first quarter, JSA hired a Business and Portfolio Development Associate to further relationships with industry in pursuit of technology commercialization. In the second quarter, the Laboratory launched the Biomedical Research and Innovation Center (the BRIC). In the third quarter, TJNAF hosted Dominion Energy's SPARK757 Micro-pitch and Energy Innovation Conference, supported by the Office of Technology Transitions EPIC Prize. In the fourth quarter, JSA held the second Crossing the Chasm innovation field trip, bringing Jefferson Lab staff to tour and engage with neighboring innovation partners at Canon Virginia and NASA Langley Research Center.

In the third quarter, TJNAF hosted more than 575 attendees May 8-12 at the 26th International Conference on Computing in High Energy and Nuclear Physics (CHEP2023) in Norfolk. The conference addresses the computing, networking and software issues for the world's leading data-intensive science experiments and was the first in-person CHEP conference since 2019.

TJNAF hosted many visitors this year, including a Japanese delegation on December 5 to discuss the International Linear Collider (ILC) Technology Partnership. This initiative, led by the KEK Laboratory in Tsukuba, Japan, is aimed at building an international collaboration focused on ILC technologies. TJNAF has been involved in superconducting radiofrequency technology related to ILC for many years. JSA has active Cooperative Research and Development Agreements (CRADAs) with five new in progress, three active International Cooperative Research and Development Agreements (ICRADAs) with two new in progress, one inter-agency agreement and one international agreement.

The Laboratory, in partnership with Dominion Energy Innovation Center brought the SPARK Virginia program to Jefferson Lab for a full day micro-conference focused on advancing and supporting energy innovators. The Laboratory remained committed to external engagements as evidenced by the active CRADAs, SPPs, inter-agency and international agreements and partnerships.

### **Office of Technology Transitions**

It is recognized that the efforts TJNAF is making towards achieving this goal by applying to the Energy I-Corp (EIC) Pipeline Development Topic (1) in a multi-lab collaboration with Ames & INL. This is a model that could be scaled to support other national laboratories who have not yet participated in Topic 2 or may need additional support from larger laboratories. In fact, this particular collaboration inspired more collaborative language in the subsequent EIC lab call. Finally, we commend TJNAF's creative idea to use the Technology Commercialization Internship Program (TCIP) Closing Event as an opportunity to promote the EIC program amongst an audience of TJNAF researchers and external stakeholders. The out of the box thinking the TTO team has demonstrated suggests they are on their way to foster a greater culture of entrepreneurship and community engagement at the Laboratory.

TJNAF was a great partner to the Technology Commercialization Internship Program, was very engaged with its intern and was very responsive to intern related activities. TJNAF was a pleasure to work with to develop the end of summer event. TJNAF's TTO created an innovative session for the end of summer event to encourage EIC among its PIs and graciously hosted the program. The session was attended by not only OTT, Laboratory mentors, and TJNAF personnel but also representatives from TJNAF's external technology community.

TJNAF demonstrated a notable improvement in FY 2023 in its participation in DOE'S Technology Commercialization Fund and was awarded its first TCF Base project.

TJNAF staff is to be commended for its participation in the DOE Annual Technology Transfer Data Call per DOE P 482.2 and working closely with DOE to ensure its timely reporting of consistently high-quality lab partnership agreements data and technology transfer performance data. TJNAF exceeded expectations for its support of DOE TT data and metrics collection, management, analysis, and reporting activities.

TJNAF staff is to be commended for responding in a timely manner with complete, detailed, and constructive answers to all or most of the survey questions of DOE's RFI, Activation Energy: DOE's National Laboratories as Catalysts for Regional Innovation.

## **4.5 Contractor Value-added**

### **SC Nuclear Physics**

TJNAF has been very support of SC and NP's vision for the future of U.S. nuclear physics in all regards and its messaging on the importance of the SC mission has been very important. TJNAF continues to show leadership in helping the NP community develop a compelling Long-Range Plan vision for the future of nuclear physics at TJNAF and for U.S. Nuclear Physics writ large. It has also facilitated important in-roads to enhance STEM education through a wide range of well-organized activities.

## Site Office

The Board chair and JSA Contractor Assurance System(CAS) representative participated in the quarterly CAS Leadership meetings updating on JSA corporate and board activities, corporate investments and reach back. The Board chair submitted the CAS Program Description, Rev. 6, for TJSO approval, with updates that included the JSA board and committee changes.

The Board was active in monitoring and supporting the Laboratory through the integrated contractor project. JSA became an integrated contractor effective October 1, 2023. This was an aggressive and successful execution of this project.

The Commonwealth of Virginia provided \$660K funding through SPP JSA 2011W014 for Laboratory projects, including:

- Continuation of Prestigious Fellowship Program with three named postgraduate fellowships to attract very highly qualified junior scientific staff in the critical areas of Theory, Accelerator, and Experimental Physics.
- Continuation of EIC Fellowship Program to support postdocs and graduate students to build on the EIC Center success, increasing the Laboratory's efforts on the EIC scientific research program to ensure future leadership in the EIC program. Three research fellowships were awarded to postdocs from Florida International University, University of Virginia, and University of California, Riverside. Three graduate fellowships were awarded to students from Ohio State, Old Dominion University, and Catholic University of America.
- Accelerator Science Critical Hire for the recruitment of an excellent, internationally recognized accelerator scientist. This hire will grow new programs in accelerator R&D and contribute to the Electron Ion Collider.

JSA awarded \$558K for 33 projects in the FY 2023 JSA Initiatives Fund Program, leveraging over \$800K in contributing and matching funds. Over two-thirds of the funds awarded support the Lab's User community.

The Residence Facility continued to be a valued corporate investment, providing convenient and affordable housing for Laboratory Users. In addition to Users on-site working on their experiments at the Laboratory, facility guests include Users attending collaboration meetings, review meetings, and laboratory-hosted workshops; as well as lab interviewees, employees (temporary stays) and corporate visitors. The Residence Facility Great Room and Field are used for laboratory-sponsored events. SURA completed the renovation and upgrading of one residential building during the fiscal year.

Other Corporate Reach Back: SURA provided support to Laboratory leadership on legal, tax, financial and governance matters.

Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Headquarters				
4.1 Vision and Planning	B+	3.3	30.0%	
4.2 Responsive and Accountable Leadership	B	2.9	25.0%	
4.3	B+	3.2	10.0%	
4.4 External Engagements and Partnerships	B+	3.3	10.0%	
4.5 Corporate Support	B+	3.1	25.0%	
Overall HQ Total				3.1

**Table 4.1 Program Performance Goal 4.0 Score Development**

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Headquarters	B+	3.1	100.0%	
Performance Goal 4 Total				3.1

**Table 4.2 Program Performance Goal 4.0 Score Development**

Score	0.0-0.7	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 4.3 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.*

**Site Office (Site Office)**

The assessment for each Objective under this Goal is provided below.

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

The Laboratory leadership recognized the need to address the ongoing safety and operational culture challenges and is taking action to include an energy isolation work pause and high-risk work planning evaluation and continued implementation of a hazard assessment and mitigation tool (electronic permit administration system, ePAS). This self-declared pause is in addition to the SC mandated review of high consequence work planned and performed off hours, which the Laboratory and TJSO partnered on for implementation. These pauses generated good questions and opportunities for improvement ranging from conduct of operations to work planning and control to Environment, Safety and Health procedure clarifications. The Laboratory should ensure questions and comments from staff are addressed to enable and ensure implementation success. Meaningful, sustained results demonstrating robust work planning and control implementation based on an effective worker health and safety system are expected in the next fiscal year.

As part of a continuing effort to address "one deep" positions supporting health and safety programs, in FY 2023 the Laboratory hired an Industrial Hygienist, Environmental Engineer, Health Physicist, and two safety engineers to support fall protection, construction and prevention through design.

In FY 2023, JSA integrated HPI into all assessment and notable event causal analyses and corrective action plans, aligning with DOE HPI investigation practices, methods, and tools. This should bring further improvement in the conduct of work planning and control and the lessons learned program, along with emphasis on "just culture." The DOE looks forward to the maturation of implementation in the near term.

A successful DOE Laboratory Accreditation Program (DOELAP) for personnel dosimetry external review was completed in May 2023. Four minor concerns were identified, and a corrective action plan developed.

While the Laboratory tracks events, injuries, near misses and operational issues, it is not clear how Laboratory leadership analyzes, trends, and acts on this information in a rigorous and sustainable manner. Further, the Laboratory should improve access to this information to include metrics, trends, actions, and improvements as a part of an encompassing set of performance assurance information.

The Laboratory is commended for improving the TJSO involvement and awareness of initiatives, notable events, work observations, critiques, and corrective actions. The Laboratory is not always thorough or timely in its identification and response to conditions and behaviors that impact safety. The Laboratory's vigilance in understanding the root cause of these challenges and appropriately improving

the program remains critical. TJSO encourages early and often communications regarding Laboratory operations to ensure awareness and to enable partnership in continuous improvement. The Laboratory has not been consistent with thoroughly addressing walkthrough observations reported by the TJSO

As it relates to Accelerator Safety Order (ASO) DOE O 420.2D, the Laboratory participated in the Office of Science initial accelerator site-assist visit to review order implementation as well as to discuss how changes impact the Laboratory. This site assist visit was primarily centered around applicability of the ASO to low energy accelerators, test stands, and accelerator component testing facilities. Discussions also included the expanded definition of the Accelerator Safety Envelop and the flexibility it provides for coverage of devices, facilities, and operations that were previously excluded from the ASO. Notably, the site-assist visit resulted in no concerns, and the Laboratory has been forward leaning in actively addressing safety (including radiation safety) in response to this visit.

The Laboratory approach to shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy should be improved. The Laboratory utilizes Operational Safety Procedure(s) (OSP) and Lockout/Tagout (LOTO) forms for controlling hazardous energy. Failing to have all controls identified in the procedure(s) consolidated leaves a potential gap in safely performing work. The Laboratory has plans for addressing this early in FY 2024 with the implementation of ePAS as a critical element to improving work planning and control.

Elevated work program continued to see less than adequate implementation this FY. The Laboratory has had repeated examples of poor implementation pointed out by TJSO in the past two FYs.

TJSO acknowledges the Laboratory's pivot to address challenges associated with ensuring an effective Worker, Safety & Health Program to include investigations into procedure violations, human performance errors, and addressing willful disregard of Laboratory operational policies. The Laboratory's vigilance in understanding the root cause of these challenges and appropriately improving the program remains critical.

## **5.2 Provide an Efficient and Effective Environmental Management System**

The Laboratory overall has an effective Environmental Management System and is recognized for sustainability considerations as part of Laboratory improvements.

In support of and feeding into the DOE Climate Adaptation and Resiliency Plan (CARP), the Laboratory continues to track progress on identified resiliency solutions previously documented in TJNAF's FY 2022 Vulnerability Assessment and Resiliency Plan (VARP). In support of the DOE Climate Adaptation and Resiliency Plan (CARP), the Laboratory continues to track progress on identified resiliency solutions previously documented in TJNAF's FY 2022 Vulnerability Assessment and Resiliency Plan (VARP). As an example, TJNAF completed a sitewide stormwater condition assessment, completed an underground water intrusion study, and performed maintenance work on underground drainage systems. All these efforts are related to the flooding risk identified in the VARP concerning the main accelerator's underground experimental halls. This information is being incorporated into the DOE Sustainability Dashboard's Resiliency Tracker which is due in the 1st Quarter FY 2024.



In response to Executive Order 14057 and DOE Order 436.1A, JSA developed an actionable roadmap to achieve carbon pollution free energy (CFE) goals by the 2030 deadline. This roadmap leverages the existing electric utility contract, expands the Laboratory’s onsite renewable portfolio, incorporates building electrification, and minimizes reliance on the purchase of energy attribute credits. Because the Laboratory proactively had this roadmap already established allowed them to swiftly respond to the sustainability strategic plan data call in FY 2023.

The Laboratory should increase their vigilance when composing/completing environmental liability data reporting and providing thorough supporting documentation. The environmental liability data report was sent back to the Laboratory for correction, as well as the AFDCS entries due to inconsistencies and lack of supporting documentation as noted during the KPMG audit (notice during audit). Additionally, the Laboratory should improve the timeliness of data collection, analysis, processing and composing of deliverables for TJSO to properly review and approve prior to submission to the appropriate regulators. Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Site Office				
5.1 Integrated ES&H	B	2.8	80.0%	
5.2 Environmental Management System	A-	3.7	20.0%	
Overall Site Office Total				3.0

**Table 5.1 Program Performance Goal 5.0 Score Development**

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Site Office	B	3.0	100.0%	
Performance Goal 5 Total				3.0

**Table 5.2 Program Performance Goal 5.0 Score Development**

<b>Score</b>	<b>0.0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 5.3 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 assessment for each Objective under this Goal is provided below.*

**6.1 Provide an Efficient, Effective, and Responsive Financial Management System**

The Laboratory executed the project plan to become an integrated contractor. The Laboratory successfully managed the project schedule, met overall objectives, coordinated with DOE and a banking institution. Contract No. DE-AC05-06OR23177 was modified to change Jefferson Science and Associates (JSA) status as a Non-Integrated Contractor to an Integrated Contractor, effective October 1, 2023. This is a significant achievement for the Laboratory.

JSA used The Financial Management System Tools and Controls to monitor costs and avoid overspending this fiscal year. The Laboratory submitted their financial reports on time or ahead of schedule for the duration of the fiscal year. Additionally, the Laboratory was able to maintain 95% for on-time timesheet submittals for the duration of the performance year.

In September 2023, Mr. Cohn Reznick, Office of Inspector General (OIG), began the FY 2019 and FY 2020 gap year incurred-cost audits. On behalf of the OIG, the Defense Contract Audit Agency (DCAA) conducted an audit on JSA's FY 2021 Incurred Cost. In August 2023, DCAA held an exit conference and concluded there were no findings.

The OIG implemented a new audit strategy for the submission of Incurred Cost Proposals. In FY 2022, the Laboratory incorporated OIG's new plan and submitted their FY 2022 Incurred Cost Proposal ahead of schedule. The Laboratory's submission was deemed adequate by the DCAA and they will begin their Incurred Cost audit in October 2023. There were no findings or questioned costs identified in the audit report.

**6.2 Provide an Efficient, Effective, and Responsive Acquisition Management System and Property Management System**

Acquisition Management:

The FY 2023 Procurement Balanced Score Card (BSC) total score is estimated to be over 93% out of a possible 100 points, which utilized 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 over 93% was a challenge given the large influx of dollars and requirements related to the various projects. The Laboratory executed 2,811 procurement actions valued at \$52.7M, 4,032 e-commerce transactions valued at \$1.9M and completed 78 transactions using DOE Integrated Contractor Purchasing Team (ICPT) agreements for computer products valued at \$1.24M.

In addition, the Laboratory achieved strategic source savings of \$6.19M. The Laboratory earned DOE's Gold Green Buy Award for sustainable acquisitions by purchasing 11 Priority Products in 6 categories.

This is the sixth time the Laboratory was recognized for achieving “Gold” level, which resulted in the Green Buy Prime Award for FY 2022 for demonstrating excellence in Sustainable Acquisition (awarded in 2023 for calendar year 2023 performance). The Laboratory also received the 2023 Electronic Product Environmental Assessment Tool (EPEAT) Purchasers Award for the seventh straight year for its commitment to choosing more sustainable electronics that are more energy efficient, less toxic, longer lasting, and easier to recycle than typical electronics. Both outstanding awards recognize the Laboratory’s commitment to the Department’s goals of being more environmentally friendly and sustainable.

As it relates to the Department’s Small Business program, the Laboratory exceeded four of their six mandated small business subcontracting goals (Small Business, Women-owned Small Business, Veteran-Owned and Service-Disabled Veteran Owned) and came close to meeting their other two mandated small business goals (Disadvantaged and HUBZone), which was truly excellent. A total of \$26.4M of small business procurements in FY 2023 led to the accomplishment or near accomplishment of these goals. These goals are established by the Department and feed directly into the Department’s overall small business procurement goals established by the U.S. Small Business Administration.

The Laboratory continued to support a formal Small Business Mentor Protégé Agreement with Momo’s Cafe (a small, disadvantaged women-owned business) to assist the Protégé in identifying, developing, and promoting capabilities, experience and technical expertise that will help foster growth and business development for its future catering services. Momo’s Cafe seeks to increase the capability and capacity of its full-service restaurant and vending machine operations to provide greater food services capabilities to the Mentor’s future catering requirements. These mentoring arrangements are established by the Laboratory without any additional DOE funding and demonstrate the Laboratory’s commitment to the Department’s small business program.

A formal Procurement Evaluation and Reengineering Team (PERT) Review was conducted on July 31-August 4, 2023. During the out brief on August 28, 2023, the review team informed the TJSO and the Laboratory that there was a total of 55 weaknesses identified (26 were identified by the Laboratory’s Self-Assessment and 29 that the PERT Team found). Once the draft report is issued by the PERT team, it is necessary that the Laboratory work with the Contracting Officer to comment and finalize the report based on a “factually accuracy” review/determination and to resolve and close out the subsequent weaknesses.

#### Personal Property:

The Laboratory continues to benchmark other sites for efficiencies (e.g., TJNAF adopted SLAC’s practice of intensive screening of printers, scanners, and imaging devices for hard drives). Multiple loans and donations were processed, which required significant effort and DOE approval.

The Laboratory revised the TJNAF Property Management Policy and Procedures document and inventory procedures, receiving DOE approval. The Thimble Shoals lease was signed, and the storage space underwent timely preparatory work in anticipation of the movement of property, which will benefit EIC equipment storage and improve property management via consolidation.

The Laboratory dispositioned 105 tons of metal and recyclable materials from the facility this year via non-landfill pathways, which funded \$70,000 of property management operations. All shipments received export control/high risk reviews and were completed safely.

The Department completed the field portion of the triennial personal property assessment. The report has not been issued; thus, the results will be discussed next fiscal year.

### **6.3 Provide an Efficient, Effective, and Responsive Human Resources and Talent Management Systems**

The Laboratory continued aggressive recruiting efforts to fill positions with 180 positions filled in FY 2023 as of September 1, 2023. The Laboratory continued aggressive recruiting efforts to fill positions, with 180 positions filled in FY 2023 as of September 1, 2023. Positions filled in FY 2023 increased by 16% in comparison to FY 2022 during a 12-month period.

In March 2023, the Laboratory held their first virtual event called, “Road to Jefferson.” The objective was to increase visibility and awareness of the Laboratory’s outreach program that reaches out to Historically Black Colleges and Universities (HBCUs) and Minority Serving Institutions (MSIs). The Laboratory Leadership provided a general orientation, and early career staff gave motivational testimonies of their path to Jefferson Laboratory. Approximately 20 representatives and staff from 8 HBCUs or MSIs participated in this event.

#### **Compensation**

In March 2023, the Laboratory Human Resources Compensation System was reviewed by DOE to determine compliance with Clause H.18: “Contractor Employee Compensation System.” The review resulted in zero (0) Findings, twenty-one (21) Strengths and nine (9) Recommendations.

#### **Benefits**

The Laboratory has instituted the “Wellworks for You” program focused on encouraging employees to live a healthy lifestyle. Currently, 275 staff members are registered in the program.

The Laboratory effectively negotiated an 8.1% annual benefits renewal rate, which is 10% below the national market average resulting in approximately \$230K in total annual premiums in FY 2023.

#### **Learning and Development**

In the fourth quarter, the Laboratory began a new Supervisor Academy program guided by Senior Leadership and key subject matter experts. This program reviews topics for supervisors relating to: Safety; Budget; Supervisory Legal; Diversity, Equity, Inclusion, and Accessibility (DEIA) Inclusive Leadership, and Coaching & Development.

### **6.4 Provide Efficient, Effective, and Responsive Contractor Assurance Systems, including Internal Audit and Quality**

The contractor assurance system is in place; however, Laboratory leadership should strive for more critical and rigorous self-assessments and follow through. For example, the Laboratory’s mid-year self-assessment did not acknowledge any areas needing improvement.

The Laboratory timely submitted its Risk Profile, Financial Management Assessment (FMA), Entity Assessment (EA), and Interim Internal Control Status (IICS) in the DOE AMERICA system as part of the annual A-123 DOE Internal Control Evaluation process. The Laboratory also used this information to

provide quarterly updates to the Directors Council and Board of Directors Meetings to ensure consistent visibility, monitoring, and action as appropriate.

In February, the Laboratory, TJSO, and SURA leadership approved the CAS Program Description (Revision 6). Relevant changes included the alignment of SURA and the Performance Assurance Office's organizational structures.

### **6.5 Demonstrate Effective Transfer of Knowledge and Technology and the Commercialization of Intellectual Assets**

The Laboratory continued to demonstrate an effective technology transfer program. Several critical Strategic Partnership Projects/Cooperative Research and Development Agreements (SPPs/CRADAs) were entered this fiscal year and successfully administered. In FY 2023, 6 Invention Disclosures and 4 Patents were awarded which relate directly to the Laboratory's core competencies.

The Laboratory continued to participate in the Department's Technology Transfer Working Group (TTWG) as it relates to the transfer of technology and commercialization of intellectual assets of the Laboratory.

Numerous small business companies requested letters of support for their Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) proposals and 34 support letters were sent for actual proposals that were submitted to DOE with 9 proposals receiving funding of approximately \$7.44M. This 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.

Significant focus and effort towards meeting public access requirements was demonstrated, and the Laboratory achieved accepted manuscript submission rates of 96.1% in FY 2023. The Laboratory's strong commitment to public access, including its focus on comprehensiveness and staff outreach, is to be commended. The Laboratory has a long-standing, effective Scientific and Technical Information (STI) management process, and accepted manuscripts have been efficiently incorporated into the routine submission of STI to the Office of Scientific and Technical Information (OSTI). The Laboratory continued the process of engaging the Associate Laboratory Directors when authors did not use the approval process, which leads to an increased understanding of, and compliance with, the standard process. Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Site Office				
6.1 Financial Management Systems	A-	3.7	20.0%	
6.2 Acquisition and Property Management Systems	B+	3.3	20.0%	
6.3 Human Resources	B+	3.3	20.0%	
6.4 Contractor Assurance Systems	B+	3.4	25.0%	
6.5 Technology Transfer	B+	3.3	15.0%	
Overall Site Office Total				3.4

**Table 6.1 Program Performance Goal 6.0 Score Development**

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Site Office	B+	3.4	100.0%	
Performance Goal 6 Total				3.4

**Table 6.2 Program Performance Goal 6.0 Score Development**

<b>Score</b>	<b>0.0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 6.3 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's and tomorrow's mission(s) and complex challenges.*

The assessment for each Objective under this Goal is provided below.

**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 Facilities Maintenance and Operations**

The Laboratory has managed Facilities and Infrastructure by maintaining systems supporting accelerator operation through continued performance of repair and maintenance activities which included numerous preventive maintenances, corrective maintenance, service-related, and modification tasks that optimized facility and infrastructure usage and supported the Laboratory's mission execution. Weekly SAD coordination meetings and safety stand-down coordination activities were conducted to prioritize planned activities during the extended SAD. In addition, weekly coordination meetings were conducted between the Data Center Advisory Committee and the FML, ES&H, and CST organizations to improve communication on activities related to the Jefferson Lab Data Center.

Highlights of Jefferson Lab's maintenance performance is as follows:

- Replaced obsolete controls with Honeywell controls for the Cryogenic Test Facility (CTF) cooling tower to improve performance reliability.
- Completed software upgrades to critical Mechanical Control Systems' servers supporting the Cryogenic Operations, Experimental Equipment Lab (EEL), and Applied Research Center (ARC) buildings.
- Conducted a condition assessment of Hall A to better understand the nature and extent of continuing water intrusion.
- Completed Hall A crane repairs.
- Added an additional portable chiller plant to support the temporary chiller plant operation outside CEBAF Center. This resulted in establishing a backup capability should the main operating plant become inoperable or require repair thus eliminating a potential negative impact to the Laboratory.
- The Laboratory met expectations for maintaining systems supporting accelerator operations, with an uptime exceeding 98%.

## Facility Safety

The Laboratory continued to strive for safety posture improvement as evidenced by the following facility safety related activities:

- Accelerator Safety Order DOE O 420.2D covers both safety (Objective 5.1) and Facilities (Objective 7.1): The Laboratory participated in the Office of Science initial accelerator site-assist visit to review order implementation as well as discuss how changes impact the Laboratory. The Laboratory is actively considering and addressing facility related information in response to the visit.
- Completion of the fire protection-related annual performance assurance test and inspection of the accelerator fire-detection system. This resulted in the discovery of corroded fire suppression piping in Halls A and C. The Laboratory took action to flush the systems to enhance availability and operability of the systems. The Laboratory is also actively planning fire suppression system replacement for these Halls as the existing systems are past end of life.
- The FML Division Safety Officer initiated daily site visits to facility staff and subcontractor work areas engaging in regular Laboratory safety meetings and continuing implementation of weekly subcontractor safety audits maintaining an average more than the 80% metric goal for Technical Representatives to oversee onsite work safety performance and trend analysis.

## Sustainability

- The Laboratory successfully completed all annual updates in the DOE Sustainability Dashboard. The follow-up data validations with the DOE Sustainability Performance Office (SPO) were approved, with positive feedback from SPO. The Laboratory continued to participate in the Demand Response Program which is designed to reduce power usage during peak demand.
- The Laboratory implemented a new electric vehicle (EV) charging program (required per the FAST Act) and installed twelve dual-port level-II Energy Star EV charging stations.
- The Laboratory received its seventh consecutive EPEAT Purchaser Award for 2023 (based on 2022 purchases) and the Laboratory's sixth consecutive gold (second superior) Green Buy Award for FY 2022 (received FY 2023).
- The Laboratory completed a renewable energy feasibility study to contribute towards carbon pollution free electricity (CFE) and renewable energy sustainability goals. The Laboratory also completed a site wide water balance, quantifying incoming and outgoing water usage (equipment type specific), in support of the Water Management Plan due next fiscal year.



## Material Condition

The condition of the Laboratory facilities is satisfactory in most areas; however, improvement is needed to ensure adequate working conditions and to preserve and protect DOE investments including, for example, water intrusion management in experimental halls.

- While managed intermittently during accelerator downtime, groundwater intrusion into experimental halls A, B, and C is a continued concern because of the potential impacts to both personnel and equipment. Water flows across equipment mounted to walls, including electrical junction boxes, cable trays, etc. Mineral deposits collect similarly in the path of the water. Water also collects on the floor during excessive flow. The Laboratory has installed make-shift collection cofferdams, gutters, and hoses to manage water intrusion. The Laboratory plugs leak when new points of water entry are observed. The halls and other areas such as the tunnel should be comprehensively evaluated to affirm structural integrity, safety of electrical systems and other impacted equipment that has been subject to water intrusion. TJSO is interested in the plan to address water intrusion in the long term.
- Now that we have emerged from the COVID-19 pandemic and more staff, users and visitors are coming to the Laboratory, the Laboratory should be presentable, including maintained and serviced sidewalks free of tripping hazards, clean building skins, and housekeeping around the campus.
- Laboratory leadership will need to develop an implementable strategy for deferred maintenance in FY 2024 to support investment in this area.

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

Laboratory leadership recognizes the deficit in project management experience and capacity at the Laboratory in Project Managers, risk analysts, and project controls to deliver on the multitude of large and small projects portfolio. The science program projects are managed by talented Project Managers and Project Directors. Conventional projects are lacking the full set of project talent, and the DOE encourages addressing these gaps in the near term to ensure DOE (and non-DOE) investments are appropriately managed. TJSO would benefit from Laboratory leadership's structured, concise insight into project performance.

Major Capital Projects:

**Notable Outcome:** Effectively plan and manage the scope for SLI Line-Item projects to ensure successful delivery within approved scope and budget, including the CEBAF Renovation and Expansion (CRE) and Thomas Jefferson Infrastructure Improvements (TJII).(Objective 7.2)

This Notable Outcome was met. Discussion follows:

- **CRE Project:** At the onset of FY 2023 the Laboratory identified that the project was continuing to experience cost increases which were a direct result of escalation associated with the extended forecast for completion of the Applied Research Center acquisition. The updated Total Project Cost (TPC) increased ~\$20M beyond the upper end of the cost range approved at CD-1 in March

of 2020 which was rejected by DOE in favor of keeping within original cost range. In July of 2023, to support sustainability goals for TJNAF long term, a decision was made by the TJSO to include electrification of both CEBAF Center and the ARC building in the project baseline. To allow for the design of the electrification scope and revising acquisition planning documents the preliminary project schedule to obtain CD-2/3A was extended by ~8 months.

While just outside this performance period, the ARC building acquisition was finalized and recorded on October 26, 2023. The project team is to be commended for having been extremely responsive throughout this fiscal year in providing all support needed to the DOE in support of the decision to maintain the project at \$90.3M TPC while meeting mission need.

- **Thomas Jefferson Infrastructure Improvements (TJII) Project:** Mission Need Statement was approved in November 2020 and CD-0 was approved in December 2020 with a cost range of \$77-98M. As of the end of the 4th Quarter of FY 2023, the Laboratory had completed the Analysis of Alternatives (AoA) including having undergone an independent peer review of the AoA sponsored by the SLI FPM. In the Fall of CY 2022, the Laboratory Project Director reported that the project estimate for the entire original scope approved at CD-0 had increased significantly since CD-0 from \$98M to \$169M. In January 2023 the recommended top priority to reduce cost into an acceptable cost range be limited to the Test Lab High Bay Annex (TLHBA) scope along with the associated necessary supporting utilities moving forward to CD-1 approval. Remaining scope would be put forth to consider for a new line-item infrastructure improvement project. The project team was responsive throughout this fiscal year in providing support needed to the DOE. The conceptual design report for the TLHBA was initiated in September 2023.

### General Plant Projects Performance

- **End Station Refrigerator 2 (ESR2):** As of the end of the 4th Quarter of FY 2023 the project was 97% complete. The Schedule Performance Index (SPI) was 1.00 and the Cost Performance Index (CPI) was 0.83. The Total Estimated Cost is \$9,500,000 and the Estimate at Completion (EAC) was \$9,349,016. A Baseline Change Request (BCR 23-001) was implemented in April which included an update of cost and schedule for the remaining work to complete the project including revised labor estimates based on lessons learned, revised procurement costs, and scope changes to align with KPP demonstration. The result of this BCR increased the budget at completion (BAC) from \$9,174,395 to \$9,364,646 and reduced the remaining cost contingency which was at \$325,605 (as of Baseline Change 22-002) to \$135,354.

During the month of June, the Laboratory executed a site wide Safety Pause to review all High Hazard Work which resulted in a 1-week delay to all activity on ESR2. Additionally, hot weather and moderate work restrictions resulted in a 1-week delay to ESR2 work activities. The project continued fabrication and installation work on Helium and Oil piping for the main compressor. In July the project completed the installation of the cold piping transfer line continued between ESR1 and ESR 2 buildings which had been a critical path activity for many months. For the utility systems, the project completed installation of the regeneration system and for control systems, it continued work on power conduit/wire and compressor room tubing installations and initiated installation of coldbox tubing.

There are still several months of continued schedule performance on critical on project and off project activities necessary to be able to complete performance testing and commissioning on schedule in May 2024 and complete the project on or before the end of the 4th Quarter of FY 2024. The Laboratory should continue its management focus on this project to maintain its safety posture and accurately forecast upcoming challenges, mitigate risk, and identify efficiencies that will help keep the project performance on track. The project's on-time completion remains critical for the future installation and operation of the MOLLER Major Item of Equipment project. The execution of the required off project dependencies as the project moves closer to completion should be a routine performance assurance element for project management and Laboratory leadership.

- **Site Mechanical System Upgrade:** As of the end of FY 2023 this project, which was originally scheduled to be completed in December 2022, had completed all the base scope associated with installation of pressure independent control (PIC) valves. However, the project had not yet completed the planned scope enhancement work associated with installation of water savings fixtures. That work was awarded in January 2023 and was completed in March 2023 one month later than the original planned completion date due to the subcontractor having experienced delays in receiving materials needed to complete the work. A BCR (23-001) for this project, under development since the 1st Quarter of FY 2023, as well as the much-delayed completion of the Project Management Plan (PMP) which was initiated in FY 2022, were completed in May 2023 along with the project's final closeout report. Completion of this project resulted in improving the stability and energy efficiency of the chilled water system.
- **Cryogenic Test Facility (CTF) Upgrade:** As of the end of FY 2023, the project had costed \$2.1M of the \$5.2M (41.5%) in funding provided to complete the project. It completed 3 separate baseline changes during FY 2023. The first one, BCR 23-001, addressed an increase in final contract award for the Distribution Box system (including increase in labor estimate for demolition, installation, and project management) and an 18-month schedule extension to accommodate a change in the distribution box installation strategy to a design-build strategy that required cryogenics labor that was not available until after the higher priority ESR2 project was completed. The second, BCR 23-002, addressed additional costs for distribution box system valves as well as excess resource hours associated with project management tasks. The third baseline change was for increased costs to procure Coldbox 1 and additional distribution box equipment. It also removed all remaining scope associated with the 2K Recovery Heat Exchanger as the project team was having difficulty identifying a technically viable solution for obtaining this equipment which resulted in removal of a Key Performance Parameter (KPP). To support the KPP removal proposal, the project conducted an operational analysis and assessment of the system which determined removal of the KPP would not affect the cryogenic supply to the Test Lab or the Cryogenic Test Facility (CTF) mission. In September the project team identified a fourth potential BCR, this is associated with the existing coldbox that is leaking helium (discovered during the operational assessment mentioned earlier) and requires replacement within the next 2 years. The new coldbox requires 2 heat exchangers, and the project team is having difficulty finding a vendor that can supply the heat exchangers without having to extend the project schedule an additional 6 months from May 2024 to November 2024, which would deplete the current remaining 6 months of schedule contingency. A final recommendation and associated BCR is being formulated by the project team and the definitive design for coldbox 1 continues. Given this project started in August 2020, the continued rigorous management attention was not evident to accurately forecast and overcome

challenges, mitigate the ongoing high risk associated with vendor delays and identify efficiencies that will help complete the project.

- **Cooling Tower Water Reuse:** The Laboratory did not meet expectations on this project. The project team was ultimately unsuccessful in engaging a critical stakeholder, the City of Newport News, to discuss the viability of entering a Utility Energy Service Contract (UESC), to bring stormwater from City Center to Jefferson Lab which is a fundamental premise of this SLI-sponsored General Plant Project. In July 2023, the Laboratory provided a recommendation to TJSO and SLI to cancel the project and proposed alternative options to be considered for redistribution of the \$3.9M in funding that had been received for this project. In September 2023, TJSO was notified that the entire amount of funding must be returned to SLI for reutilization on its programmatic Integrated Priority List for General Plant Projects.
- **Laydown Yard Expansion – Canon:** This project expands the existing laydown storage site near the Canon Blvd accelerator entrance to accommodate much needed additional laydown storage requirements that will be displaced by the siting of the new Test Lab High Bay Annex (TLHBA).

As of the end of FY 2023, the project had costed \$82K of the \$2.25M (3.6%) in funding provided to complete the project. The project team completed the 100% conceptual design, the 65% definite design, the 100% definite design, and is working on completing the final design.

Completion of Final Design and PMP was impacted by the fact that the project team had to perform additional consultation with new endangered species, a wetland determination process, and a delayed study on vibration analysis. The project plans to set the baseline for project completion assuming that there is an impact and construction will be aligned with the Scheduled Accelerator Down (SAD) starting March 2024. The project's baseline schedule will be set assuming that there is an impact from construction vibrations to CEBAF operations and will require construction to occur during the FY 2024 accelerator down time.

Completion of the PMP continues to be delayed from March 2023. Given this project started in September 2022 and has a planned completion date of December 2024, which includes 6 months of schedule contingency, it too requires management focus to bring the project to completion within 2 years.

- **Central Utility Plant (CUP) Upgrade:** The goal of this \$4.2M project budget is to increase chiller plant cooling capacity and increase system resiliency and reliability. The scope includes replacing three chillers in the Test Lab basement with an additional 800-ton chiller to the CUP.

A fourth 800-ton chiller will be added to the CUP to provide redundancy during equipment failures and maintenance activities. As of the end of FY 2023, the final design is complete with planned contract award in 1st Quarter of FY 2024. The anticipated construction award was delayed from the 4th Quarter of FY 2023 to the 1st Quarter of FY 2024. The project team has forecasted that long lead procurement items (transformer, switchgear, switchboard, and chillers), which they are procuring now as government furnished equipment (GFE), will result in the project being completed in FY 2025. These actions demonstrate the Lab's ability to identify and effectively mitigate risks that could result in costly delays to project completion and could be applied consistently across the other Laboratory projects.

**Other Key Activities Performance**

**Jefferson Lab Data Center (JLDC):** The Commonwealth of Virginia (VA) allocated 3 million dollars in FY 2023 (July 2022-June 2023) to begin planning for a High-Performance Data Facility (HPDF). Pre-design work continued using existing Virginia State funding in anticipation of follow-on funding for phase 1 construction of the building shell. In May 2023, the project team completed its efforts to prepare a response to a Request for Proposal (RFP) from the DOE Office of Science’s Office of Advanced Scientific Computing Research on the HPDF project. (Jefferson Laboratory was selected as the lead Laboratory for the HPDF hub in October 2023. This major accomplishment will be discussed in the Laboratory’s FY 2024 PEMP report).

Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Site Office				
7.1 Usage and Life Cycle Cost	B+	3.2	40.0%	
7.2 Planning and Acquisition	B	2.8	60.0%	
Overall Site Office Total				3.0

**Table 7.1 Program Performance Goal 7.0 Score Development**

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Site Office	B	3.0	100.0%	
Performance Goal 7 Total				3.0

**Table 7.2 Program Performance Goal 7.0 Score Development**

<b>Score</b>	<b>0.0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 7.3 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 assessment for each Objective under this Goal is provided below.

**8.1 Provide an Efficient and Effective Emergency Management System**

The Laboratory continues to ensure emergency management capabilities are effective and available. An updated improved Emergency Management Plan was revised to incorporate feedback from a DOE Assessment that included improving the plan's unified command model discussion, aligning titles to standard nomenclature, and adding clarification to roles and responsibilities. Tornado siren tests, public announcement system tests and the quarterly accountability drills were successfully conducted. The drills and exercises this fiscal year could have more rigor and involve post-Covid scenarios, which presents opportunities for next FY.

**8.2 Provide an Efficient and Effective Cyber Security System for the Protection of Classified and Unclassified Information**

The Laboratory posture is consistent with a solid cyber program and meets the intent of Departmental priorities. The laboratory continued its impressive cyber risk posture as demonstrated by various metrics and assessments. No identified root-level compromises or use of the Laboratory to platform to external systems were noted. The Laboratory's systems function at a level that fully supports science and technology mission at the Laboratory.

Efficiency was gained in the metric that measures scans of hosts with high or critical vulnerabilities, as these have reduced from the 1st Quarter = 1.7%, 2nd Quarter = 1.67%, 3rd Quarter = 1.9% to a current level of 1.3%. This goal was previously 4% of what can be scanned, and the Laboratory exceeded TJSO's expectation of a reduction to 3%. Time to respond to alerts this fiscal year reduced from 1st Quarter = 29.0 hrs., 2nd Quarter = 23.4 hrs., 3rd Quarter = 21 hrs., to a current level of 18 hrs. More importantly, there were no root-level compromises or use of the Laboratory to platform to external systems. Internet availability remained at 100%, and there were no major network outages in FY 2023.

The Laboratory demonstrated significant contributions in the areas of central services, Department engagements, and mission support. For central services, tools such as SNORT (network), OSSEC logs, and others such as Squil console were previously used, and those were open source and difficult to maintain and manage. Major enhancements have been implemented this year that have reduced those inefficiencies. Splunk Enterprise Security, which has been configured to replace Squil, is impressive as it now centralizes logging, and collects all logs at the computer, firewall and network levels. It looks for events and generates a risk code, and the risk code threshold generates an alert. In addition, Varonis logging was integrated into Splunk to centralize logging and alerting with a focus on visibility and searchability. This product enables a dashboard view, and supports IPv6, aiding progress toward the Department's Executive Order for logging (EO 14028), which sets a maturity model for log management.

There have been additional gains made in achieving Departmental cyber security initiatives. The Laboratory has deployed Forescout as part of DOE's Continuous Diagnostics and Mitigation (CDM) Program for hardware asset management. Data collected is to be provided to the Department via Splunk, while software asset management with the use of Carbon Black, and EDR (Endpoint Detection and Response) is achieved with the use of CrowdStrike/Falcon. The Department's initiative for an increase in the use of students is being addressed, as the Laboratory's program to restore their level of students and interns for their cyber operations laboratory, is progressing, as a one hire was made with plans in place to hire two more near term.

The Laboratory's latest deployment of MFA (Multi Factor Authentication) now allows remote access capability to the SCICOMP (Scientific Computing) environment. MFA was also implemented for encryption at rest, encryption in transit for web and email, and logging at the Enterprise level 1. In addition, there has been development in the use of accessible disk cache for the tape system, which resulted in over 1 PByte (petabyte) of physics data being processed on the farm without involving tape access. This feature has improved performance and resiliency.

The performance in Information Systems has proven effective, as the Laboratory has developed software and system enhancements to support the Integrated Contractor migration process, scheduled to go live on October 1, 2023. In addition, the Laboratory attained a significant achievement by receiving the critical Authority to Operate decision for the cyber security program. The Laboratory is commended for critical strategic planning and successful completion of technical challenges while balancing heavy administrative requirements for the cyber program.

### **8.3 Provide an Efficient and Effective Physical Security Program for the Protection of Special Nuclear Materials, Classified Matter, Classified Information, Sensitive Information, and Property**

The Safeguards and Security (S&S) program is integrated with the Department, the city of Newport News, and the Laboratory's experiments and operations. Four additional S&S staff were hired, and efficiencies were realized (e.g., consolidation of access registration services).

Annual Security Awareness Training was significantly improved. Specifically, the training now includes the updated badging protocols, an expanded guest access control procedure discussion, the addition of S&T Risk Matrix awareness discussion slides and updated CI discussion points, and a government vehicle security section.

The Laboratory's Unarmed Security Services subcontractor's performance was determined to be overall "Unsatisfactory." To address this issue, the Laboratory chose not to exercise an option year award and to recompute the contract. An interim contract was awarded in June and the interim subcontractor successfully met all project management and staffing objectives and has complied with all post assignment requirements. A technical evaluation of all respondents' proposals to the RFP was completed and submitted for final award determination expected in the 1st Quarter of FY 2024.

With prompting from TJSO, a more robust Local Inside Threat Working Group has been established.

The Laboratory submitted a revised Homeland Security Presidential Directive (HSPD) 12 implementation plan for meeting the requirements of *Personal Identity Verification for Uncleared Contractors*, with positive feedback from DOE.

The Laboratory appropriately utilized the DOE Office of Intelligence (IN), Counterintelligence (CI), and local law enforcement for their onsite presence during specific employee termination actions and for CI guidance on Laboratory access for non-U.S. citizens.

Below are tables that show which Program Offices provided performance evaluation input for this Goal and the overall performance score for the Goal.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
Site Office				
8.1 Emergency Mgmt.	B+	3.4	25.0%	
8.2 Cyber-Security	A-	3.5	50.0%	
8.3 Special Nuclear Materials, Classified Property	B+	3.2	25.0%	
Overall Site Office Total				3.4

**Table 8.1 Program Performance Goal 8.0 Score Development**

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Site Office	B+	3.4	100.0%	
Performance Goal 8 Total				3.4

**Table 8.2 Program Performance Goal 8.0 Score Development**

<b>Score</b>	<b>0.0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 8.3 Goal 8.0 Final Letter Grade**



## **APPENDIX**

### **List of SC Programs:**

SC Accelerator R&D and Production

SC Basic Energy Sciences

SC Nuclear Physics

SC Workforce Development for Teachers and Scientists

**SC Accelerator R&D and Production**  
**Thomas Jefferson National Accelerator Facility**  
**2023 Performance Evaluation**  
**Office of Laboratory Policy**

**Goal 1.0 Provide for Efficient and Effective Mission Accomplishment**

**Weight:** 75.00%   **Score:** 3.5   **Grade:** A-

**Goal Evaluation:**

TJNAF efforts in ARDAP programs to develop industrial SRF accelerators, advance high-efficiency magnetron-based RF power sources, and advance material science for both SRF cavities and megawatt-class beam windows is innovative and outstanding. Engagement with industry has been strong and will serve as a positive model for lab-industrial technology transfer.

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

**Weight:** 50.00%   **Score:** 3.5   **Grade:** A-

**Objective Evaluation:**

TJNAF efforts in ARDAP programs to develop industrial SRF accelerators, advance high-efficiency magnetron-based RF power sources, and advance material science for both SRF cavities and megawatt-class beam windows is innovative and outstanding. Engagement with industry has been strong and it is hoped will serve as a model for lab-industrial technology transfer.

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

**Weight:** 50.00%   **Score:** 3.4   **Grade:** B+

**Objective Evaluation:**

Several TJNAF scientists helped to lead the recent multi-agency Basic Research Needs Workshop on Laser Technology, which developed a long-term strategic vision for laser technology for scientific research and applications.

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

**Weight:** 25.00%   **Score:** 2.8   **Grade:** B

**Goal Evaluation:**

TJNAF Business Office support for proposal submission remains problematic for a third year in a row. Submitted proposals frequently lack required appendices (e.g., DMPs, PIER plans, Vitae, Current &

Pending lists), conflicted reviewer lists, and Site Office letters. This has resulted in an unacceptably high administrative declination rate for TJNAF proposals.

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

**Weight:** 40.00% **Score:** 3.3 **Grade:** B+

**Objective Evaluation:**

TJNAF has developed a strategy for industrializing superconducting radiofrequency accelerator technology and is pursuing the strategy effectively.

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

**Weight:** 40.00% **Score:** 2.1 **Grade:** C+

**Objective Evaluation:**

TJNAF Business Office support for proposal submission remains problematic. Submitted proposals have, for three years in a row, frequently been missing required appendices (e.g., Curricula Vitae, Current & Pending lists, DMPs, PIER plans) and Site Office letters, often appearing to stem from failure to properly create the PDF document and upload it or to allow adequate time for the Site Office to prepare the required letter. Together with other issues that fall within the PI's control (e.g., missing Conflict Reviewers list) this has resulted in an anomalously high administrative declination rate for TJNAF proposals. Anxious PIs, knowing the failure rate is high, have compounded this issue by consuming an inordinate amount of program manager time asking questions that are clearly answered in the FOA or FAQs. The Laboratory's Business Office needs to do its job: know what needs to be submitted and in what format, and support their PIs as they seek funding to do important R&D.

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

**Weight:** 20.00% **Score:** 3.3 **Grade:** B+

**Objective Evaluation:**

Communications between PIs and ARDAP are generally good.

**SC Basic Energy Sciences**  
**Thomas Jefferson National Accelerator Facility**  
**2023 Performance Evaluation**  
**Office of Laboratory Policy**

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

**Weight:** 45.00%   **Score:** 3.4   **Grade:** B+

**Goal Evaluation:**

TJNAF was an excellent partner to the Proton Power Upgrade (PPU) project and an effective partner to the Linac Coherent Light Source – II – High Energy (LCLS-II-HE) project, including providing assembly, delivery, and testing of cavities and cryomodules. The Laboratory successfully completed final assembly of one cryomodule, but missed qualification of two cryomodules and final assembly of a second cryomodule, resulting in a partially missed Notable Outcome. However, the lab effectively mitigated the challenges experienced with LCLS-II-HE cryomodule assembly and qualification and began work to recover schedule.

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

**Weight:** 50.00%   **Score:** 3.0   **Grade:** B

**Objective Evaluation:**

TJNAF was an effective partner to the LCLS-II-HE project, including providing assembly and testing of cavities and cryomodules. The lab has challenges with the LCLS-II-HE cryomodules and is working to mitigate the issues and associated schedule recovery.

**Notable Outcome:** Effectively manage and safely execute the assigned LCLS-II-HE project scope in accordance with DOE Order 413.3B. Performance will be assessed based on the assigned project management responsibilities and cryomodule work planned and accomplished during FY 2023.

**Outcome:** TJNAF partially met this notable outcome. The lab completed one of the four milestones planned for FY 2023. TJNAF completed the final assembly of its cryomodule number 3, but missed qualification of cryomodules 1 and 2, as well as the final assembly of the fourth cryomodule in part due to unavailability of the lab's test facility for repairs and maintenance. TJNAF has mitigated the issues and schedule recovery is in progress. - **Achieved**

**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:** 50.00%   **Score:** 3.7   **Grade:** A-

**Objective Evaluation:**

TJNAF has been a highly successful partner in delivering critical components for the PPU project on schedule.

**Notable Outcome:** Effectively manage and execute the assigned PPU project scope in accordance with DOE Order 413.3B to safely accomplish the planned work per the approved Performance Baseline. Performance will be assessed based on the work planned and accomplished during FY 2023.

**Outcome:** TJNAF was a highly successful partner in delivering critical components for the PPU project on schedule with only minor delays and within cost, exceeding the technical performance criteria, with no equipment failures to date. Four cryomodules (CMs) are installed in the Spallation Neutron Source tunnel and have demonstrated successful operation; the remaining three production CMs were delivered in time to support installation and will enable the performance increase needed to demonstrate the PPU threshold key performance parameters. - **Achieved**

**SC Nuclear Physics**  
**Thomas Jefferson National Accelerator Facility**  
**2023 Performance Evaluation**  
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**Goal 1.0 Provide for Efficient and Effective Mission Accomplishment**

**Weight:** 30.00%    **Score:** 3.7    **Grade:** A-

**Goal Evaluation:**

TJNAF is the world's leading hadron physics facility making impressive contributions to our understanding of the nuclear force and nuclear structure.

TJNAF has an outstanding record of scientific and technical accomplishments in the 12 GeV era. TJNAF continues to provide effective and efficient support to its scientific program, and to high priority current and future experiments.

TJNAF management and staff have significant leadership on the development and construction of the Electron-Ion Collider (EIC) and its baseline ePIC detector. The partnership with BNL is highly effective and cooperative.

The TJNAF theory group continues its contributions with the publication of significant science results. TJNAF continues to have very significant impact by providing mid-range high performance computing (HPC) resources to the US lattice quantum chromodynamics (QCD) community. TJNAF staff are making seminal contributions to artificial Intelligence and machine learning (AI/ML) algorithms for experiments and for accelerator reliability.

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

**Weight:** 50.00%    **Score:** 3.7    **Grade:** A-

**Objective Evaluation:**

TJNAF continues to be the world's leading facility in Hadron physics, providing high luminosity, polarized electron beams to a variety of polarized and unpolarized targets. The 12 GeV program has published a number of impactful scientific results in prestigious journals.

The TJNAF staff is doing an excellent job in supporting the experiments conducted in all four CEBAF Halls.

TJNAF researchers provide scientific leadership on some experiments but in the majority of experiments where leadership or significant science contributions is claimed, there is a lack of information that makes it difficult to evaluate the specific scientific contributions of many staff members of the research groups associated with Halls A-D.

TJNAF staff has obtained competitive FY 2023 NP awards to study and implement artificial Intelligence and machine learning (AI/ML) algorithms and techniques in detector designs, data analysis and accelerator reliability. TJNAF should consider increasing its efforts in AI/ML with an updated strategic view and plan.

The TJNAF SRF group's successful development of in place plasma processing of Superconducting RF modules at TJNAF is a critical development for energy reach for CEBAF. This has potential impact not only in nuclear physics, but also in advancing accelerating technology for SC Laboratories in general.

The TJNAF theory group's research performance in nuclear structure has not been meeting mission needs. The group has a good physics program in the sub-scopes of Lattice QCD (LQCD) and Cold QCD and their performance has been satisfactory. At the same time, TJNAF's dominant research (LQCD and Cold QCD) is found to be low risk and insular, focusing primarily on CEBAF physics.

TJNAF scientists publish in leading peer-reviewed journals and make invited and contributed presentations at national and international meetings. TJNAF has a sustained publication and reporting output that is well-aligned with the NP program. According to the Laboratory, FY 2022 peer-reviewed publications in leading physics journals were distributed by research area as follows: Medium Energy – 47; Theory – 42; Accelerator Physics – 24; and Computational Science – 8. Invited talks were reported by research area as follows: Medium Energy – 55; Theory - 166; Accelerator Physics – 11. There were 24 theses based on research activities at TJNAF during FY 2022. This year, TJNAF staff took lead roles in organizing and hosting 29 workshops and meetings.

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

**Weight:** 50.00% **Score:** 3.7 **Grade:** A-

#### **Objective Evaluation:**

TJNAF management has not provided sufficient attention to the purpose of recent science and technology reviews. This has resulted in a lack of evidence-based information to identify which research-group members are making leading contributions to the various experiments. This is a re-occurring comment appearing in every recent panel review. Accordingly, it is difficult to make an in-depth or reasonable evaluation of innovation, novelty, and leadership of the research groups.

TJNAF SRF science and technology group has advanced the state of in-situ cryomodule plasma processing by performing the first production run on a group of cryomodules using the developed robust recipe. The production run partially restored performance of four cryomodules. This recipe and method can be used for remaining cryomodules at CEBAF and can be used as guides at other SC accelerator laboratories.

The SRF group with strong record of attracting funds from NP Accelerator R&D funding opportunities as well as work for others from other SC laboratories. TNAF SRF group should continue their collaboration in SRF technology with other SC laboratory and universities and share developed in-situ plasma processing techniques with the SC accelerator community.

The TJNAF Center for Injectors and Sources (CIS) team is world leading in polarized electron sources. CIS staff is commended for their recent success in demonstrating a 500 KV higher voltage polarized gun and photo-cathode fabrication methods.

TJNAF continues excellent efforts on education and industrial outreach. A new graduate program in accelerator science supporting graduate fellowship at TJNAF is a potentially significant contribution to the field. This represents a powerful and forward-thinking method of not only supporting accelerator physics at TJNAF, but also in generating workforce in accelerator science.

TJNAF leadership is an integral part of the Electron Ion Collider International Community, having taken responsibility of chairing the EIC Advisory Board.

While not necessarily under the oversight of the NP, the forward thinking of TJNAF with interdisciplinary initiatives that include nuclear physics expertise, such as the workshop on Advancing Medical Care Through Discovery in the Physical Sciences, overlapping research with the Biomedical Research and Innovation Center, and research relevant to the proton radiotherapy facility are innovative and provide potential directions for future research.

The Lattice QCD group at TJNAF presented a preliminary FY 2025-2029 five-year strategic plan for NP Lattice QCD Initiative at the 2023 Annual USQCD Review. The panel supported the preliminary plan and considered the budget and the schedule reasonable. The panel also noted that Lattice QCD will play increasingly important roles for NP research, especially in EIC era. The panel commended NP Lattice QCD contributions to Nuclear Theory Topical Collaborations.

TJNAF staff served on the FY 2023 Nuclear Data Advisory Committee (NDAC). This committee is formed every 2 years to review and advise DOE/SC/NP and the US Nuclear Data Program (USNDP) on aspects of the program from an end user perspective and provide a written report with findings and recommendations (due early FY24).

The TJNAF theory group has a long-standing history of supporting CEBAF physics. TJNAF theory group has significant contributions from university professors with joint appointments at TJNAF. Comparative reviews have analyzed the productivity of the group over time and found it to be average with respect to other groups, with the productivity of some staff outpacing others. The long-term vision seems to be mostly focused on CEBAF operations and the group seems not yet integrated in the EIC theory effort.

TJNAF has done well in engaging young scientists in research opportunities. The following workforce development statistics were reported for junior scientists: Undergraduate Students – 52; Graduate Students – 179; Postdoctoral Associates – 36.



Staff at TJNAF have been appropriately recognized for their contributions through numerous awards. Two staff members were named as Fellows of the American Physical Society. A staff scientist received a DOE Early Career Research Award. An accelerator scientist received the inaugural Mexican Community of Particle Accelerators Carlos Hernandez-Garcia Prize. A staff scientist was recognized as an Outstanding Reviewer by the Institute of Physics. A member of the Laboratory leadership was named to the Hampton Roads Power List by Inside Business. A postdoctoral student was awarded the Best Oral Presentation in the quantum chromodynamics and hadron structure session of the HADRON2023 Conference. A graduate student from the University of Barcelona received the APS Dissertation Award in Hadronic Physics for thesis work completed at TJNAF.

**Notable Outcome:** Develop a strategy for the upgrade of the lattice quantum chromodynamics (QCD) cluster at TJNAF in time for it to be considered during the USQCD review.

*Outcome:* The Lattice QCD group at TJNAF presented a preliminary FY 2025-2029 five-year strategic plan for NP Lattice QCD Initiative in time for the 2023 Annual USQCD Review. - **Achieved**

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

**Weight:** 45.00%    **Score:** 3.2    **Grade:** B+

### **Goal Evaluation:**

The MOLLER MIE achieved CD-3A in FY 2023 and has initiated long lead procurements, and the project is well positioned to set its performance baseline early in FY 2024.

The TJNAF EIC project team has made good progress within available funding, supporting both accelerator and detector design. The EIC team at TJNAF effectively engaged the international community to identify potential in-kind contributors.

CEBAF did not meet its performance measurement goals for FY 2023 due to an extended scheduled accelerator down time to proactively address safety. CEBAF delivered 3,306 hours, 81% of its planned hours, to its four experimental halls enabling several high-impact experiments. CEBAF continues to make good progress on recovering its design accelerating gradient via the CEBAF Performance Plan, including successfully implementing in-plasma processing to recover gradient in its C100 cryomodules.

TJNAF hosts a large nuclear physics user community, numbering nearly 1,900. TJNAF has an impressive record of community building, from scientific engagement through the Jefferson Lab Users Organization to the education and outreach programs reaching pre-college, undergraduate, and graduate student populations and the public.

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

**Weight:** 10.00%    **Score:** 3.6    **Grade:** A-

**Objective Evaluation:**

The MOLLER MIE advanced its overall preliminary engineering and design tasks and held a successful comprehensive Final Design Review in December 2022. Advancing the final design is likely to lower overall risk and impact in advance of establishing the performance baseline.

The MOLLER MIE successfully for CD-3A, Approve Long Lead Procurement. Since receiving CD-3A approval in March 2023, the MOLLER MIE project has lost several months on the obligation schedule of long lead items due to delays in completing drawings and delays in the procurement process. The project team needs to put a credible plan in place to get all long lead procurements awarded. As the team prepares for baselining, there should be a tighter loop between procurement, project controls and the control account managers to ensure the schedule for procurements is complete and not overly optimistic.

The technical interfacing of in-kind contributions to the MOLLER project from the National Science Foundation and the Canadian Foundation for Innovation has been seamless.

The Electron-Ion Collider project assumed an ambitious work plan in FY 2023 buoyed by \$138.24 million in Inflation Reduction Act funding in addition to a modest increase in annual appropriations over FY 2022 levels. The year saw a significant increase in staffing, maturation of the ePIC detector plans and designs, and heavy focus on preparing for long lead procurement Critical Decision (CD). Beyond planning and design, some research and development and scope execution occurred, for example planning to receive magnets no longer required by the Advanced Photon Source at ANL occurred within a constrained time period but the sites ensured codified material handling, evaluation, testing, and storage procedures incorporated safety.

Planning for CD-3A proceeded organically and rushed but may have reached a similar end point of readiness for review more efficiently had project leadership planned the process for preparing for this CD in a detailed and deliberate manner. With the more recent addition of a planned second long lead procurement CD (CD-3B), the project intends to lessen its focus on planning to set its performance baseline. Nevertheless, the project would do well to methodically chart a measurable and manageable path to attaining this CD.

The EIC project provided timely and free access to live presentations and deliberations along with supporting materials associated with 46 design reviews, 38 led by BNL and eight led by TJNAF. The candid feedback shared by both reviewers and project team members fostered a healthy environment for maturing the overall design level of the project as it proceeded toward readiness for long lead procurements and eventually setting its performance baseline.

The EIC project provided well-justified, clear, and timely responses to budget formulation requests in support of FY 2025 budget formulation. The project has shown creativity in seeking efficiencies and partners to deliver the full scope necessary to produce a successful EIC within current affordability constraints.

The EIC project has wisely sought advice and examples from peer projects to base its preparations for a long lead procurement Critical Decision, narrowed the prioritized scope of the long lead

procurement to items that have (1) achieved final decision before a preparatory director's review and (2) the project can acquire with available funds. The project, learning from predecessors, has efficiently and effectively completed the necessary work to monitor and control these procurements using earned value, which will also facilitate integration of the associated data once the project integrates the full project scope in its earned value management system.

The EIC project is planning to utilize engineering and design staff from the MOLLER project as MOLLER moves to baseline readiness. Close coordination between the two projects is important to ensure resources are not pulled from MOLLER prematurely.

**Notable Outcome:** Effectively manage the Electron-Ion Collider project in accordance with DOE Order 413.3B to safely deliver the project scope, including planned research and development and preliminary engineering design activities. Performance will be assessed based on the work planned and accomplished during FY 2023.

*Outcome:* TJNAF staff working together with BNL staff on the EIC project effectively managed the project in FY 2023, making good progress on the preliminary designs, and preparing to request approval for critical decision (CD)-3A, Approve Long Lead Procurement. - **Achieved**

### **Objective 2.3: Provide Efficient and Effective Operation of Facilities**

**Weight:** 75.00%    **Score:** 3.0    **Grade:** B

#### **Objective Evaluation:**

CEBAF failed to meet its performance measurement goal for FY 2023, delivering 3,306 hours of beam of a planned 4,100 hours. The delivered hours were provided with a facility reliability of 73% to four experimental halls. The failure to meet the performance goal was due to the extension of the maintenance and upgrade down time in the spring and summer of 2023. Near the end of the scheduled down time there were two "near miss" safety incidents. This led to work stoppages to review and revise safety procedures. Soon after Laboratory management decided to severely restrict off-hours activity in response to the High Risk/High Hazard safety memo from SC DDO. These actions, while warranted to ensure the safety and health of TJNAF staff, extended the scheduled down time by nearly two more months.

Laboratory management's emphasis on personal responsibility and empowering employees to enforce the safety culture at TJNAF is important and should be continued. Laboratory management should continue to re-visit how its safety practices and safety culture affect safety incidents.

CEBAF reliability continues to be a concern. Achieving sufficient margin to reliably sustain top energy operation is an important goal of the CEBAF Performance Project, and the Laboratory should continue to evaluate outyear scheduled accelerator downtime activities, including refurbished cryomodule installations and in situ plasma processing, to avoid delays in realizing this goal.

The Accelerator Division efforts on hiring and promotion in have made good progress achieving the goal of having the proper staff level and mix of skills to avoid problems from unforeseen events.

The plasma processing efforts at TJNAF is a critical development for energy reach for CEBAF with potential impacts in nuclear physics as well as advancing accelerating technology for SC labs. Adequate workforce and resources should be devoted to this effort for timely delivery and success.

CEBAF management is re-evaluating the role of CEBAF beam loss monitors, which currently only give a beam protection loss signal, to give a gauged measure of loss rate to use as a tuning aid. This is an encouraging development and provides another path to realize higher beam availability.

TJNAF makes appropriate use of a Program Advisory Committee (PAC), a best practice at scientific user facilities, to assess and recommend experiments for beam time. The PAC has established four recommendation categories for proposals: approved, conditionally approved, deferred, and rejected. The 51st PAC meeting held in July 2023 considered an unprecedented 37 submissions, of which 14 were new proposals, 7 were jeopardy proposals, and 16 were letters of intent. The PAC granted approval to 5 of the new proposals and confirmed its support for all the jeopardy proposals.

The recommended actions by the PAC are being responsibly acted on by TJNAF leadership to execute a high-quality science discovery program at CEBAF.

#### **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 Jefferson Lab Users Organization (JLUO) provides valuable assistance and encouragement to CEBAF users. It has over 1,890 members from roughly 324 institutions in 39 countries. JLUO continues to provide valuable input on future directions for the CEBAF program. The JLUO supports regular user-lab communications through bi-annual meetings with lab management to provide user comments on lab activities and to communicate lab plans to the users. The broad representation of the community on the JLUO board of directors is impressive.

The JLUO provides an important resident workforce in the form of students and postdocs. In FY 2023, there were approximately 230 young scientists at the Laboratory. Mentorship of these young scientists is included in TJNAF scientific staff 25% research effort.

The Laboratory has made progress to re-establishing the user “atmosphere” that existed pre-pandemic. Management needs to ensure that incoming users have timely access to the necessary training and technical resources to accomplish their on-site work.

The goal of improving the energy reach at CEBAF through the replacement of older cryomodules and via in-situ plasma processing should enhance the overall science program. It would be valuable to understand which scheduled experiments at CEBAF require the highest energy electron beams and would benefit most from the improved energy reach.

The EIC project continues to make slow, but forward progress in soliciting international contributions. Activities in FY 2023 included participation in multiple international meetings, including but not limited to the EIC Asia workgroup meetings, the annual EIC Users Group meetings held in Warsaw, Poland, multiple collaboration meetings across Europe and South America, and continued design discussions with collaborators in Canada, the United Kingdom, and France. The establishment of the EIC Advisory Committee and EIC Resource Review Board have been useful in maintaining a cohesive international presence at the EIC. Periodic meetings with the SC IRIC office were established to maintain effective communication and awareness of EIC activities regarding international engagement. Progress in developing and completing international project documents necessary for international in-kind contributions has been slow. Agreements will be necessary for major in-kind contributions, and EIC leadership should be mindful of the time necessary to complete such documentation. It's also noted that, given the relatively small (~5% of the total project cost) international in-kind contribution to the EIC, a balanced approach should be taken to pursuing international activities.

The EIC project entered into contracts with two international entities for design support, providing seed funds that could lead to an in-kind contribution of some or all of the items designed. The project continues to communicate with individual countries about their interests in the project, has held two funding agency meetings intended to encourage multiple simultaneous commitments to the project, and recognizing the success of the detector collaboration, has begun planning a similar collaboration for the accelerator. The project now has just a year left to have in place agreements with international partners in advance of baselining. Not only must the project greatly accelerate efforts to complete these agreements, but it must now also distinguish the planned scope it expects domestic and international partners to complete from scope it intends to accomplish with project funds.

The accelerator group has made several important science and technology advances relevant for CEBAF, but also having broader SC/DOE and national impact. The Laboratory and the SC complex have successfully benefited from several multi-laboratory technical partnerships including SRF support for LCLS-II, SNS, and FRIB.

The recent and near-term upgrades in the various halls are adding important new capabilities addressing high priority physics at CEBAF. The approval of new experiments and retention of experiments in jeopardy demonstrate a strong future 12 GeV science program. TJNAF has a significant international impact as evidenced by the diverse international users' group and the broad representation on CEBAF experiments.

TJNAF continues to effectively implement its Jeopardy policy, where proposals that have been approved for four years or more but are not scheduled must be reviewed by the PAC. For the PAC meeting held in July 2023, seven proposals that fell within the Jeopardy policy passed this additional review step. NP welcomes the use of this Jeopardy policy as a means for the laboratory to assure that previously approved proposals remain scientifically compelling.

TJNAF is prolific in producing news features and press releases. The Laboratory also published five science highlights in FY 2023. TJNAF is encouraged to maximize opportunities to highlight published science results on the SC website.

TJNAF has a historically strong record in education and outreach, and the Laboratory continued these outstanding efforts in FY 2023 to reach pre-college students, undergraduates, and increase science literacy. TJNAF sponsored several pre-college programs including the TJNAF Science Activities for Teachers (49 secondary teachers), the BEAMS — Becoming Enthusiastic About Math and Science program (~1,200 middle school students), the Jefferson Lab High School Summer Honors Program (12 students), the Jefferson Lab Mentorship Program (8 students), and the Virginia Summer Residential Governor’s Mentorship in Engineering (12 students). Undergraduate programs that brought undergraduates to TJNAF included the Science Undergraduate Laboratory Internship program (17 students), the NSF-funded Research Experiences for Undergraduates program in collaboration with Old Dominion University (12 students), and the Community College Internship program (3 students). In the area of science literacy, TJNAF hosted field trips and staff participated in career fairs, classroom visits, and science fair judging in FY 2023 that reached more than 4,560 students. The Laboratory is participating in the Cooperating Hampton Roads Organizations for Minorities in Engineering program that encourages students to widen career options by selecting math and science courses, and has partnered with the Reaching, Educating & Empowering Children Foundation to offer grade-level science and math collaborative activities in both virtual and in-person settings. TJNAF also hosted the Virginia Regional Science Bowl in FY 2023, where 141 middle and high school students participated in the virtual competition.

TJNAF has formal partnerships with institutions across the nation to strengthening physics departments including joint (local universities) and bridged (fixed short-term) faculty positions to build programs in Jefferson Lab-related physics and the Hampton University Graduate Studies summer school program that introduces 2nd and 3rd year physics students to the science at Jefferson Lab. TJNAF is a member of the Virginia Physics Consortium that facilitates cooperation among the six local and regional institutions.

TJNAF received the Public Relations Society of America Silver Anvil Award of Excellence for the Jefferson Lab Fall for Science Virtual Field Trip.

### **Goal 3.0 Provide Effective and Efficient Science and Technology Program Management**

**Weight:** 25.00%    **Score:** 3.6    **Grade:** A-

#### **Goal Evaluation:**

TJNAF has a well-defined strategic planning process to inform annual planning and maintain core capabilities. The Laboratory’s mission is well aligned with NP’s mission, and laboratory leadership effectively communicates the strategic vision with stakeholders. The long-term plans for the medium energy and theory groups need to be better articulated.

TJNAF is an effective partner in the EIC project, with TJNAF staff filling critical project leadership positions. TJNAF is poised to deliver EIC technical scope and is actively engaged in recruiting international in-kind contributions.

The MOLLER MIE project is being effectively managed, and the transition to new project leadership went smoothly.

The Laboratory's responses to recommendations from NP reviews often lack context, attentiveness to the question at hand, and level of detail for NP to assess.

TJNAF continues to invest its LDRD funds in areas relevant to SC initiatives and the NP mission.

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

**Weight:** 30.00% **Score:** 3.7 **Grade:** A-

**Objective Evaluation:**

The Laboratory has a well-structured planning process, connecting the Laboratory's vision and mission with the Laboratory's annual plan, departmental plans, and agenda (including LDRD). The Laboratory maintains scientific strategies in nuclear physics, accelerator science and technology, its partnership on the EIC project, and computational science and technology. The Laboratory's vision and mission are well aligned with the NP mission.

Recent and envisioned future accelerator facility upgrades put the Laboratory in an excellent position to support an exciting research program, to be a strong partner in the realization of the EIC, as well as to support other DOE accelerators labs.

The TJNAF Medium Energy research programs in Halls A-D would benefit from documented strategic plans with milestones, deliverables, and responsibilities. Hall D has a short-term plan instituted in response to an internal review, but a longer-term vision is needed.

The nuclear theory program needs a long-term vision that would address the criticism received on their overall productivity, insularity, and group composition. As of today, TJNAF theory is not strategically aligned to lead in all the sub scopes its supports and it is not well positioned for growth.

EIC project leadership at TJNAF and BNL have pursued completing MOUs with their Laboratory leadership to document contributions from the laboratory supportive of the project listed in the project's assumptions document. The project smartly initiated this effort and recognizes the importance of having these agreements. The project will need to finalize these MOUs well in advance of setting its performance baseline.

The EIC project established both an Advisory Board and Resources Review Board, with international and domestic partners joining. The two boards provide valuable strategic direction and address issues affecting accelerator and detector scope for the EIC project and are envisioned to provide advice on future resource allocation for EIC operations.

Laboratory management's encouragement of the staff to develop individual career profiles is a good approach to address retention issues associated with career advancement.

Recent hiring of experts in SRF and accelerator technology seems to be reversing the outflow of TJNAF accelerator technology experts to other SC labs in the past five to eight years. The SRF group also expects all-cause attrition of about half the rate of the lab at large. This is a good and promising development for TJNAF, and the leadership is commended for this progress.

Laboratory management was able to hire MOLLER project director, deputy director, and L2 manager in time to prepare for the baseline review. NP appreciates the timely hires.

TJNAF conducted an Inclusion Survey in 2023. The results of the survey have provided insights Laboratory management is using for targeted improvements to laboratory culture. The Laboratory has been encouraged to dig deeper into the survey results to ensure that underrepresented groups' opinions are not lost within the overall results.

During site visits and facility and research reviews, a mixed message was received by NP regarding adherence to the TJNAF Code of Conduct. NP has requested additional information on instances of violations of the Code of Conduct and requested the Laboratory administer a survey covering harassment and discrimination. The Laboratory has rebuffed those requests.

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

**Weight:** 40.00% **Score:** 3.6 **Grade:** A-

#### **Objective Evaluation:**

TJNAF should continue to emphasize the need to perform work safely. The response to recent lock out/tag out incidents by stopping, assessing, and restarting work seems appropriate, but ensuring that the lessons of these events are learned is a critical element to prevention.

In support of the EIC project, BNL and TJNAF continue to nurture their partnership, with a 75 percent stake held by the host Laboratory, BNL and a 25 percent stake held by TJNAF based on the estimated cost of the scope each would deliver for the project. Informal agreements between the two laboratories have led to the adoption of shared project management practices that will benefit the project. For example, TJNAF will report into the BNL earned value management system while BNL will follow TJNAF processes for entering into international agreements. The two laboratories need to continue these efforts to arrive at a shared and unified governance and management structure that will facilitate the efficient control of systems, procurements, and changes.

TJNAF successfully recruited a new EIC Deputy Director for TJNAF Partnership, and the transition was well executed. Adding another individual to the EIC Project Executive Management Team with extensive DOE and SC project management experience is vital as the project works to establish the performance baseline.

Project management of the MOLLER MIE was well executed even as a new Project Manager and a new Deputy Project Manager were brought on board. The receipt of Inflation Reduction Act funds allowed the funding of the project to its pre-baseline point estimate, and NP appreciated the effort



of the project to stay within that estimate and appropriately use IRA funds to reduce risks through both long lead procurements and through design completion and appropriate integration tasks. The in-kind contributions from NSF and the Canadian Foundation for Innovation have been very effectively integrated in management and reporting. The early use of personnel and data flow of EVMS is a best practice NP hopes to see continued in other TJNAF projects.

Management of the TJNAF theory effort is not effective. There is little indication that past recommendations provided by NP have been executed. Shortcomings on the current structure, long-term vision, and mitigating steps need to be evaluated internally by the theory group. Additional attention to the management of the theory group is needed if TJNAF wants to maintain leadership in traditional areas of investment, e.g., lattice QCD and cold QCD.

Management of the EIC-related generic research and development effort by TJNAF staff was mixed. TJNAF made awards to 15 proposals that involved approximately 40 institutions. However, unfamiliarity with the proposal solicitation, vetting, award negotiation, and in the case of fellow national laboratories, award funding processes coupled with insufficient staffing of the effort lead to a yearlong execution of what TJNAF planned to take six months. Infrequent communication with the NP likely prolonged the delays. NP is unclear how TJNAF will evaluate advancements made and the efficiency of past awardees.

A training program of approximately 20 hours (up to 8 more for Control Account Managers) is provided by the TJNAF Project Services and Support Office to relevant personnel including tech leads, with an annual EVMS refresher. This is a very positive move to support the first baselined projects in a few years. The explicit goal of meshing training of project personnel with the baseline stage of all projects is encouraged for best efficiency in project tasks such as EVMS reporting.

In FY 2023, TJNAF remained the only SC national laboratory without an accounting system that integrates with the government accounting system. NP must therefore execute TJNAF's subcontracting efforts to other national labs through the AFP process. Advanced warning on the details of Inter Entity Work Orders (IEWOs) are often not provided to NP in advance. When NP receives the IEWOs, it is often after funds have been obligated to TJNAF. The action to de-obligate from TJNAF and then re-obligate to the Laboratory of choice delays the allocation of funds and impedes work progress. While TJNAF's transition in FY 2024 to an integrated accounting system will solve many of these problems, the transition year will still require appropriate planning for the timely execution IEWOs. TJNAF should provide NP with an estimate of the intended IEWO total dollar amount so NP can hold that funding back, and as new work orders come in, TJNAF should provide regular updates on their status so that NP staff can position the funds to be moved and execute these actions promptly.

It is disappointing that the new electronic work planning system (ePAS) has not yet been fully rolled out to the laboratory. The plan to now accelerate the ePAS roll out should be balanced with ensuring that employees are fully trained and ready to use the system effectively and efficiently.

TJNAF provided nearly \$2M in Laboratory Directed Research and Development investments across 9 projects in FY 2023, including six new projects that look to expand the laboratory's efforts in QIS and

the EIC, explore future accelerator and experimental capabilities at CEBAF, and enhance and integrate research infrastructure. These new activities align well with SC and NP priorities.

TJNAF Business Operations received a Gold Level Green Buy Award and the 2023 EPEAT Purchaser Award in recognition of continued efforts in laboratory sustainability.

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

**Weight:** 30.00% **Score:** 3.4 **Grade:** B+

#### **Objective Evaluation:**

Monthly meetings with the CEBAF operations staff are well done highlighting operational experience and challenges. Staff demonstrate commendable forward thinking in prioritizing actions most relevant to improving operations with complex constraints from limited staff, time, and technical resources.

Bi-weekly virtual meetings between TJNAF leadership and NP are useful and informative. These are helpful in anticipating challenges and providing input for the NP and TJNAF.

There have been instances when the normal NP hierarchy has not been respected by staff at TJNAF. Regular interactions on budgets, reviews, and research/operations/projects matters are expected to go first through the responsible program manager. For example, direct contact was made with merit review panelists without notifying the relevant program manager. It is important that constructive and respectful lines on communication are maintained across all levels of NP and TJNAF.

Responses received from TJNAF leadership to recommendations from Science and Technology (S&T) reviews often lack the context, attentiveness to the question at hand, and level of detail for NP to assess, resulting in additional rounds of communication between the laboratory and the program. TJNAF leadership is encouraged to ask clarifying questions on S&T and other review recommendations as early as the fact-checking stage to make the overall process more efficient.

TJNAF scientists who received awards in response to accelerator R&D and artificial intelligence and machine learning (AI/ML) funding opportunities announcements provided quarterly reports and input to NP's evaluation of small projects and provided effective and valuable updates for NP program managers. They also actively participated in the annual NP Principal Investigator (PI) exchange meeting, providing virtual presentations on the status of their award work to the NP community and NP and SC Program Managers.

Monthly reporting including the new early use of EVMS for the MOLLER MIE has been forthright and excellent. MOLLER project management has communicated technical and personnel challenges at appropriate times. This has been helpful in smoothly transitioning personnel from MOLLER to the EIC which NP appreciates.

TJNAF's theory group has had a poor record in reporting and communication, failing to follow guidance provided by NP that often requires multiple follow up communications to secure the requested information. One area where NP needs have not been addressed is in obtaining details on the TJNAF theory budget. Regular reporting on theory staffing plans and available carryover does not meet expectations. Reporting expectations on the career development and mentoring of the early career workforce in nuclear theory are also not being met. Finally, statistics on the scientific productivity of the TJNAF theory group are difficult to track, since publications are often not uniquely listed as requested, and the leading efforts on large collaborative publications (experimental) are not highlighted.

NP revised its monthly reporting guidance to the EIC project at the start of FY 2023. Understanding that it would take some months to refine the reports to meet the intent of the guidance, nevertheless, significant improvements to the report stopped by the end of the first quarter of FY 2023. Some requested information the project agreed to share sporadically outside of the report. As a result, NP does not have the clarity it needs on certain aspects of the project, e.g., the workforce supporting EIC, funds obligated and expended, design activities remaining, changes to scope, to effectively monitor progress in advance of upcoming critical decisions.

TJNAF published five science highlights in FY 2023 in nuclear physics. TJNAF is encouraged to make liberal use of the NP's mechanisms for advertising published research results as science highlights.

**SC Workforce Development for Teachers and Scientists****Thomas Jefferson National Accelerator Facility****2023 Performance Evaluation****Office of Laboratory Policy****Goal 1.0 Provide for Efficient and Effective Mission Accomplishment****Weight:** 75.00% **Score:** 2.9 **Grade:** B**Goal Evaluation:**

The Laboratory executes WDTS sponsored programs in support of the SC/DOE STEM workforce mission in manners that barely meet expectations, with areas of improvement.

Compared to past year, the participation in all WDTS programs has shown decrease (SULI, CCI, and no VFP), perhaps relating to a challenging transition phase from COVID period. This has put the overall participation in WDTS DOE lab-based training programs (SULI/CCI/VFP/SCGSR) at TJNAF at the lowest compared to that at other SC labs.

The Laboratory has yet to form a focused outreach strategy to recruit applicants to WDTS-sponsored programs. The Laboratory is encouraged to make an intentional effort to raise awareness of its research and technical training opportunities to a broader audience and potential applicants, including those at the user facilities, and attract more applicants into the programs.

**Objective 1.1: Provide Science and Technology Results with Meaningful Impact on the Field****Weight:** 80.00% **Score:** 2.8 **Grade:** B**Objective Evaluation:**

The Laboratory has made continuous effort toward achieving WDTS programmatic expectation of executing the workforce training programs to deliver quality training experiences for students and faculty across the complex.

**Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals****Weight:** 20.00% **Score:** 3.1 **Grade:** B+**Objective Evaluation:**

The Laboratory is commended for identifying, recruiting, and training research/technical staff that serve as mentors/advisors for WDTS program participants.

**Goal 3.0 Provide Effective and Efficient Science and Technology Program Management****Weight:** 25.00% **Score:** 3.0 **Grade:** B**Goal Evaluation:**

The Laboratory makes effort to seek student and faculty participants for placement in hands-on learning and authentic research experience opportunities, helping ensure that DOE has a sustained, highly skilled talent pool for a future DOE science and technology workforce.

Although there are active outreach activities occur in various units, they have not led to the increase in application/participation in WDTS-sponsored programs. The Laboratory's STEM education team is encouraged to coordinate with other units, including the scientific user facilities, to develop an intentional outreach strategy to attract and recruit more applicants to WDTS programs at TJNAF.

**Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision****Weight:** 20.00% **Score:** 2.8 **Grade:** B**Objective Evaluation:**

The Laboratory is encouraged for developing and executing outreach activities aimed at providing equitable access and recruiting a more diverse, inclusive applicant and participant pool to WDTS sponsored programs. It is recommended to consider coordination with other units at the Laboratory, such as scientific user facilities, for developing strategies to engage potential applicants.

**Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management****Weight:** 50.00% **Score:** 3.1 **Grade:** B+**Objective Evaluation:**

Laboratory staff leading the execution of WDTS sponsored programs are commended for their responsiveness to programmatic direction and willingness to share with other labs on management experience.

**Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs****Weight:** 30.00% **Score:** 3.1 **Grade:** B+

**Objective Evaluation:**

Laboratory staff leading the execution of WDTS sponsored programs are commended for their responsiveness to headquarters inquiries and requests.