

FY00 JEFFERSON LAB
SELF ASSESSMENT OF
CONTRACT PERFORMANCE



Thomas Jefferson National Accelerator Facility

Director's Overview

There is no doubt that a comprehensive self-assessment provides a solid and objective basis for continuous improvement and helps to maximize productivity in times of constrained budgets. Aggressive self-assessment also plays an essential role in the performance-based contract, as we look at our accomplishments, acknowledge strengths, and identify areas for improvement. For this reason, we approach our self-assessment program as a value-added activity of line management and a tool that is useful to Lab management, particularly the Director, in assessing past performance and developing action plans for areas of improvement. In this integrated approach, the Lab Director reviews each line self-assessment to assure alignment with Laboratory goals and objectives.

As we look at the past year, we have accomplished key technical, scientific and managerial milestones, addressing areas that we have identified for improvement and incorporating suggestions from our Peer Reviews in Administrative Practices and Science and Technology, as well as from the biennial Institutional Management Review. We continue to deliver beam for a demanding experimental program, including energies above our 4 GeV design and unprecedented levels of polarized beam that set the standard in our field. We have completed several key experiments, with the first papers coming from the data collected by Hall B's CLAS. We have successfully run the Free Electron Laser for a few high-visibility experiments funded by the Commonwealth of Virginia, and the FEL is beginning to demonstrate its value as a research tool for materials science and defense applications. Our efforts in medical imaging, a direct spin-off from our work in particle detection, have led to successful clinical trials of a new type of mammogram that can be provided at a reasonable cost and that reduces the need for biopsies.

We also are working to further align and integrate our administrative performance with the programmatic needs of the Laboratory. An aggressive ISMS program at Jefferson Lab has resulted in excellent EHS performance. Our challenge now is to avoid complacency and continue this record of performance in a cost-effective manner. We have developed a Strategic Facilities Plan in accordance with guidance from the DOE that derives from the programmatic needs and goals of the Lab over the next ten years. Preliminary studies indicate that our "Becoming Enthusiastic About Math and Science" (BEAMS) program is making a real difference in the math and science scores of children in disadvantaged middle schools.

Our leadership position in the core competency of superconducting radiofrequency (SRF) has led to work in support of SNS and possibly RIA, which will benefit our efforts to upgrade the accelerator to 12 GeV. Our FEL upgrade also is underway, leading to higher energy infrared light. Funding for the hardware necessary to deliver ultraviolet light, which will further expand the FEL's capabilities, is being provided by the Air Force. In addition, our users are aggressively pursuing an upgrade of the accelerator to 12 GeV, which requires some level of R&D to be ready for construction at the appropriate time. Effective management will be required to deliver this scope of work within the available budget.

Our priority in the coming year is to reach a level of funding that allows us to sustain operations without compromising investments in our core competencies that benefit the entire science community and on which the future of our field relies. Given the expected scope of work, the Laboratory requires: (1) an increase in its operating budget to deliver the planned physics program; (2) a stable level of R&D funds to retain top scientific and technical talent in the field; and (3) a viable funding path for the 12GeV upgrade to access new and exciting science that will keep the nation at the forefront of physics. Furthermore, we must accomplish this in the context of a lab that is entering a new phase, contributing to the broad scientific agenda within the DOE.

The challenges we face are to: (1) maintain leadership in our core competencies via R&D; (2) develop scientific and technical leaders for the future; (3) continue to invest in and expand strong, positive community relations; and (4) together with SURA, begin to play a leadership role in support of basic research in the national arena as a member of a community of national laboratories.

FY00 JEFFERSON LAB PERFORMANCE REPORT

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Overview of FY00 Appendix B Performance Measures Scoring By Performance Area

APPENDIX B PERFORMANCE MEASURES AND THEIR KEY INDICATORS

Section	Description	Key Indicator	Point Value
1	Outstanding Science and Technology	Peer Review	300
2	Reliable Operations	Delivered Physics Research Operations	250
3	Production of Scientific and Technical Manpower	Number of Student Years on Jefferson Lab-related research activities	75
4	Corporate Citizenship – Public Outreach Corporate Citizenship – Tech Transfer	<ul style="list-style-type: none"> • Public Participation • Non-DOE Investment in Jefferson Lab Initiatives 	75
5	Quality Performance in Environment, Health, and Safety	<ul style="list-style-type: none"> • Cost of Injuries • Environmental Permit Exceedances 	100
6	Business & Administrative Practices	Peer Review	100
7	Responsible Institutional Management	Peer Review	100
Total Point Value			1000

TOTAL SCORE - APPENDIX B PERFORMANCE MEASURES

Section	Description	Point Value	Points Awarded	Percent of Assigned Pts	Adjectival Rating
1	Outstanding Science and Technology	300	280.5	93.5%	Outstanding
2	Reliable Operations	250	248.5	99%	Outstanding
3	Production of Scientific and Technical Manpower	75	73	97%	Outstanding
4	Corporate Citizenship	75	73.7	98.3%	Outstanding
5	Quality Performance in Environment, Health, and Safety	100	97.1	97%	Outstanding
6	Business & Administrative Practices	100	90.6	91%	Outstanding
7	Responsible Institutional Management	100	93	93%	Outstanding
Total FY00 Score Appendix B		1000	956.5	95.7%	Outstanding

Details of Scores By Performance Measure

1. Outstanding Science and Technology						
PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
1.0	Outstanding Science and Technology	300	280.5	300	280.5	Outstanding
TOTAL OUTSTANDING S&T		300	280.5	% of assigned pts = 93.5%		Outstanding
2. Reliable Operations						
PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
2.0	Delivered physics research operations	150	150	6537	8652	Outstanding
2.1	Beam availability	25	24.1	77.5%	74.6%	Outstanding
2.2	Experimental equipment availability	25	25	75%	88.2%	Outstanding
2.3	Effectiveness of the scheduling process	25	24.4	100%	97.5%	Outstanding
2.4	Overall operations effectiveness	25	25	31 weeks 100%	33.4 weeks 107.7%	Outstanding
TOTAL RELIABLE OPERATIONS		250	248.5	% of assigned pts = 99%		Outstanding
3. Production of Scientific and Technical Manpower						
PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
3.0a	Number of student years per year on Jefferson Lab related research or technical activities	35	34	1075	1036	Outstanding
3.0b	Number of advanced degrees per year based on Jefferson Lab research	25	25	53	67	Outstanding
3.1	Number of advanced degrees per year granted by minority universities and based on Jefferson Lab research	5	5	6	6	Outstanding
3.2	Participation of students from groups traditionally underrepresented in physical science and engineering fields	10	9	376	332	Outstanding
TOTAL SCIENTIFIC MANPOWER		75	73	% of assigned pts = 97%		Outstanding
4. Corporate Citizenship						
PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
4.0	Public participation (in effective person-hours per year)	20	20	80,000	80,090	Outstanding
4.1a	Public visibility: number of media citations mentioning Jefferson Lab and its science and technology	7	7	400	480	Outstanding
4.1b	Percentage of these citations mentioning DOE	3	3	>90%	100%	Outstanding
4.2	Customer satisfaction	5	4.7	>90%	93%	Outstanding
SUBTOTAL PUBLIC OUTREACH		35	34.7	% of assigned pts = 99%		Outstanding
4.3	Non-DOE investment in Jefferson Lab initiatives (including direct dollars, manpower costs, and contributions in-kind)	20	20	2 – 2.5% of JLab ops budget (\$1.42M - \$1.78M)	\$3.24M	Outstanding
4.4	Intellectual property generation as indicated by the annual number of (a) Patent applications (b) Patents awarded (c) License agreements	10	10	5 or 1 or 2	11 3 1	Outstanding
4.5	Benefit to partners based on customer surveys	10	9	5.0	4.5	Outstanding
SUBTOTAL TECH TRANSFER		40	39			Outstanding
TOTAL CORPORATE CITIZENSHIP		75	73.7	% of assigned pts = 98.3%		Outstanding

5. Quality Performance in Environment, Health, and Safety						
PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
5.0a	Occupational Injury Cost Index	35	35	50% better than DOE lab average	83% better	Outstanding
5.0b	Environmental Exceedances	20	20	4 times as good as the DOE complex average	No exceedances	Outstanding
5.1	Lost Work Day Case Rate	15	14	50% better than DOE lab average	JLab = .94 DOE labs = .98	Outstanding
5.2a	Reportable Radiation Exposures	4	4	Satisfactory ALARA program; no exposures >80% of ORPS threshold	Better than satisfactory program	Outstanding
5.2b	Hazardous Substance Exposures	4	4	No exposures above OSHA action level	No reportable exposures	Outstanding
5.3	Solid Waste Recycled	6	6	Exceed FY94 baseline ratio by 44% (increase from 15% in FY99)	Exceeded goal	Outstanding
5.4a	Radioactive Waste Generation	4	3.8	>90% of radioactive waste generated for useful purposes	No radioactive waste transported for disposal	Outstanding
5.4b	Hazardous Waste Generation	4	3.2	Produce <.25 of maximum useful hazardous waste	.51	Good
5.5	Peer Review of the Radiation Control Program	4	3.7	Appropriate program = 100	85 (= 92.5% of points available)	Outstanding
5.6	"Highly Protected Risk" Rating for High-Value Facilities	4	3.4	All facilities meet highly protected risk designation	93% highly protected	Excellent
TOTAL EH&S		100	97.1	% of assigned pts = 97%		Outstanding

6. Quality of Business and Administrative Practices						
PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
6.0	Peer Review	70	61	100%	87%	Excellent
	SUBTOTAL PEER REVIEW	70	61	% of assigned pts = 87%		Excellent
6.1	% of overrun on all projects > \$100K	1	1	≤ 8%	1.15%	Outstanding
6.2	Variance of scheduled completion time for projects > \$100K	1	1	≤ 1.10	1.0	Outstanding
6.3	% of scheduled preventive maintenance tasks completed by their scheduled due dates	2	2	≥ 94%	99.9%	Outstanding
6.4	Average % of all open corrective maintenance tasks that have been open for > 3 months	2	2	≤ 10%	3.3%	Outstanding
	SUBTOTAL FACILITIES (6.1 – 6.4)	6	6	% of assigned pts = 100		Outstanding
6.5a	% of value of property not located during the inventory cycle: Capital Property	0 ¹	N/A	Not conducted in even years	N/A	N/A
6.5b	% of value of property not located during the inventory cycle: Sensitive Property	2+2 ²	4	< 1%	.25%	Outstanding
6.5c	% of value of property not located during the inventory cycle: Stores Property	1	1	< 1%	.8%	Outstanding
6.6	% of values of Stores Inventory reduced	1	1	22%	23%	Outstanding
	SUBTOTAL PROPERTY (6.5 – 6.6)	6	6	% of assigned pts = 100		Outstanding
6.7	Number of CAS violations	1	1	0	0	Outstanding
6.8	Dollar % of invoices deemed unallowable	1	1	<1%	0%	Outstanding
6.9	% of vendor invoices paid with discounts lost	1	1	<1%	.07%	Outstanding
6.10	% of annual actual cost variance from budget for each overhead pool	1	1	<3%	.34%	Outstanding
6.11	Number of occurrences that Cost Management Report had to be resubmitted to Contracting Officer – DOE Site Office	1	1	0	0	Outstanding
6.12	Number of audit errors in travel expense reports	1	1	<2%	0	Outstanding
	SUBTOTAL FINANCE (6.7 – 6.12)	6	6	% of assigned pts = 100%		Outstanding
6.13	Average procurement cycle time	3	3	<14 days	9.09 days	Outstanding
6.14	% of total available purchasing dollars awarded to: small business concerns, small women-owned business concerns, and small disadvantage business concerns	SB 1 WO 1 SD 1	1 1 1	≥45% ≥6% ≥6%	62.6% 8.7% 8.6%	Outstanding
	SUBTOTAL PROCUREMENT (6.13 – 6.14)	6	6	% of assigned pts = 100%		Outstanding
6.15a	% of action oriented diversity commitments as established in the Affirmative Action Plan	1	1	≥ 90%	100%	Outstanding
6.15b	Representation of protected classes within each EEO-1 category	1	.85	100% Maintained	90%	Excellent
6.16	Sustainable EEOC charges	1	1	0	0	Outstanding
6.17	Compensation positions aligned with market practices	1.5	1.2	± 3% of market average	- 3.7%	Excellent
6.18	% of 3-year rolling average of annual increases in premium cost relative to market	1.5	1.5	≥ -5%	-6.4%	Outstanding
	SUBTOTAL HUMAN RESOURCES AND SERVICES (6.15 – 6.18)	6	5.6	% of assigned pts = 93.3%		Outstanding
	TOTAL BUSINESS & ADMIN PRACTICES	100	90.6	% of assigned pts = 90.6%		Outstanding

¹ Capital equipment is inventoried biannually in odd years.

² Points from measure 6.5a are assigned to measure 6.5b in even years, giving 6.5b a total of 4 points.

7. Responsible Institutional Management						
PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
7.0	Responsible Institutional Management	100	93	100	93	Outstanding
TOTAL INSTITUTIONAL MANAGEMENT		100	93	% of assigned pts = 93%		Outstanding
Total Appendix B Score on Performance Measures						
TOTAL APPENDIX B SCORE		1000	956.5	% of assigned pts = 95.7%		Outstanding

1. Outstanding Science and Technology

Overview

PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
1.0	Outstanding Science and Technology	300	280.5	300	280.5	Outstanding
TOTAL OUTSTANDING S&T		300	280.5			Outstanding

The experimental program at Jefferson Lab continues in steady state operation, with all three halls in production running at design specification. Following PAC18, the complete approved experimental program broken down by subject and Hall is:

Topic	Number	Hall A	Hall B	Hall C
Nucleon and Meson Form Factors and Sum Rules	16	6	3	7
Few Body Nuclear Properties	23	12	6	5
Properties of Nuclei	23	5	10	8
N^* and Meson Properties	40	6	26	8
Strange Quarks	19	5	11	3
Total	121	34	56	31

The Lab believes that this approved program represents some of the best physics that will be done anywhere in the next ten years, and that it includes some experiments that will have a major impact on our understanding of the basic quark structure of matter. As of the end of FY00, we have completed data-taking for roughly 45% of this program (though analysis of the data is not as far along). Full data is at hand for seventeen of the 121 experiments, and significant portions of the needed data have been obtained for 49 more. We were gratified to see that the Science and Technology Peer Review Panel agrees with our assessment of the significance of this program, and appreciated the progress toward reducing the backlog through a combination of reliable operations and the jeopardy review process.

Other achievements of significance in the nuclear physics program included: a year of three-hall operation with high accelerator and hall availability, and a multiplicity over 2.5; the demonstration of 6 GeV capability; and the delivery of 5.7 GeV beam for physics. The large backlog of experiments (4-5 years at the present, 30 week/year level of operations) continues to be a concern. Progress has been made toward reducing it through a thoughtful review of scientific priorities via the PAC jeopardy process, and this avenue will continue to be pursued. However, the preferred solution would be increased accelerator operations and increased efficiency, both of which are difficult in times of tight resources. The additional operating funds required to have a significant (~1/4 increase) impact on overall scientific throughput are relatively modest.

We share the committee's concerns for the laboratory leadership that result from Hermann Grunder's departure for Argonne and Nathan Isgur's illness. The search for a new laboratory director is now underway. The theory group has been reorganized under Franz Gross'

leadership, Frank Close has been engaged as a scientific advisor, and we have established a rotating distinguished visiting theorist position aimed at bringing senior theorists to the lab for extended visits. We intend to augment the group by three new theorists as soon as funding can be identified to strengthen the theory effort. We also share the committee's concern for the fact that the research staff doesn't have adequate time for their own research program. Addressing this will require the addition of scientists to the hall operations staff; this is one of our highest priorities for the coming year, and we will be working with DOE to identify the necessary resources.

The 12 GeV upgrade is clearly key to the laboratory's future, and we share the committee's emphasis on the importance of moving forward on the development of new cryomodules.

The committee recognized the success of the FEL program represented by the achievement of 1.7 kW of light in the IR. An upgrade to the FEL is underway with Navy funding, and we are working hard with the potential user community for the facility to identify the best science that can be done using the FEL's unique beam characteristics and to make the case to funding agencies for operations support.

Looking ahead, we have found setting overall priorities for FY01 with our severe financial constraints exceedingly difficult. We began with a decision to keep beam operations at the same 30-week level, as was the case in FY00. Following this, we continue with the push to higher current, high polarization beam and the evolution of the facility to the routine, high availability operation at the 6 GeV value that appears realistic in view of the remarkable performance of the superconducting cavities.

The challenges of extracting physics results from the data taken using the CLAS detector in Hall B continue to be a major focus of the Physics Division (as was noted by the Science and Technology Peer Review Committee). The Lab has been working hard with Hall B users to develop a national analysis effort for CLAS data, and has made substantial progress with the implementation of the data analysis farm. We are encouraged by the response of the users and see strong analysis groups in operation at Jefferson Lab and developing at several of the major institutions collaborating in CLAS. The first physics publication from CLAS data has now appeared, and a large number of other results are nearing publication. We will continue to follow the issue with care over the coming year.

In FY01, we will continue to maximize productivity through careful internal prioritization and resource allocation. While we remain unable to invest adequately in AARD at our present funding level in FY01, we recognize that it will be essential to remedy this problem soon in preparation for the 12 GeV upgrade. It is also clearly of interest to the larger physics community to see the lab's SRF expertise strengthened, and we will work with DOE to plan for a long-term solution to this problem. Space for both the user community and the theory group remains a pressing need, and we will work with DOE to seek a solution in FY01.

We also continue to pursue the development of the scientific case for the energy upgrade by building on our earlier work, our evolving understanding of the underlying physics issues, and the results of the ongoing research program. In FY01, this program will be discussed broadly in the larger nuclear physics community as part of the NSAC Long Range Planning process. In parallel, we are studying the accelerator physics issues as time and funding permit. Both of these activities are clearly supported by the S&T Review committee.

In summary, the Lab found the concrete observations of the Science and Technology Peer Review Committee to be consistent with our own assessment of the Lab's performance. We believe this Review was very constructive, extremely useful, and accurate in its observations. The full report of the Review of Science and Technology is included in this document as Attachment 1.

Principal Areas of Emphasis for FY01

- Identify and recruit a new director for the laboratory; and strengthen the theoretical support and research staffs of the laboratory.
- Achieve full current, high polarization beam
- Continue to manage the approved experiment backlog toward a goal of ~3 years/hall
- Continue development work toward the prototyping of a "next generation" cryomodule appropriate for the 12 GeV upgrade (and the FEL)
- Work with the light source user community to develop the science case for the FEL
- Continue close interactions and involvement with the user community
- Continue to work closely with the Hall B user community to optimize the physics output from the CLAS detector.
- Develop a CDR for upgrading CEBAF and its ancillary experimental areas to 12 GeV
- Continue to stay within budget and on schedule in our participation with SNS.
- Participate in a modest way with RIA R&D.

2. Reliable Operations

Overview

PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
2.0	Delivered physics research operations	150	150	6537	8652	Outstanding
2.1	Beam availability	25	24.1	77.5%	74.6%	Outstanding
2.2	Experimental equipment availability	25	25	75%	88.2%	Outstanding
2.3	Effectiveness of the scheduling process	25	24.4	100%	97.5%	Outstanding
2.4	Overall operations effectiveness	25	25	31 weeks 100%	33.4 weeks 107.7%	Outstanding
TOTAL RELIABLE OPERATIONS		250	248.5			Outstanding

The overall performance of the accelerator and experimental equipment continues to be a major achievement for Jefferson Lab. During FY00 we were able to exceed the goal for our key “bottom line” metric of delivered physics research operations by more than 32%. This was achieved because of improved accelerator availability compared to FY99, and hall availability and multiplicity that again exceeded the goals. The overall accelerator running efficiency was slightly lower than desired, reflecting, in part, the decision to run for 12 weeks at 5.65 GeV, a new record energy for physics experimentation. However, the combination of better than anticipated hall availability and higher multiplicity permitted us to exceed our goal for overall physics operations as expressed in the key metric, P.M. 2.0.

FY00 was the third year of full, three-hall operations. A significant achievement of the accelerator operations group during this year was supporting a wide variety of different running conditions for the users. The energy per turn was tuned to 9 different energy settings (compared to 7 in FY99) from 0.60 – 1.118 GeV. Several different numbers of turns were delivered to users at each setting, which required mastering frequent, quick changes of operating conditions that are unusual for a facility like ours. The polarization vector needed to be re-optimized every time either the number of turns or the energy per turn was changed.

FY00 also saw continued major progress on polarized beam delivery. In FY99 we were able to provide parity-quality beam with 40-50 microampere current at high (~75%) polarization; in FY00 we achieved up to 100 microampere, parity quality beam at the same, high polarization levels, resulting in an improved figure of merit (P^2I). An essential goal for full support of the physics potential of CEBAF was the enhancement of high-polarization beam delivery capability to this level (up to 100 microamperes each for Halls A and C, and a few microamperes for Hall B). This was a major focus of the accelerator development work in FY00 that was successfully achieved. A new Ti-sapphire laser was installed in July for Hall A and delivered currents up to 550 microAmperes in the Injector. This gives a significant safety margin compared to the physics requirements. This laser will be modified to provide both Hall A and Hall C beams in FY01.

Finally, progress toward realizing the full potential of the installed superconducting cavities continued. Following the first round of helium processing and performance studies for all of the installed cavities, we successfully delivered 5.65 GeV beams for physics for about one quarter in FY00. A new cryomodule was installed in January, and we were able to demonstrate full 6 GeV

capability in August, discovering in the process some serious limitations on our installed klystrons. The klystron failure rate, which has historically been around 1 1/2 per month jumped to one per day in this test. The causes of the failures will be the subject of close examination in FY01. This will include the development of a plan to address the operational issues with the present klystrons, as well as a longer term plan to modify the design for new klystrons to enable them to function well at higher power levels.

The excellent operating results were achieved through a combination of careful scheduling, a prioritized focus on the key elements of operational efficiency (availability and reliability), and ongoing support for polarized source development and energy upgrade activities.

The performance measures continue to be useful, providing a straightforward means of assessing performance of the accelerator operations and the experimental program. They have the important virtue of being well understood by both staff and users and being well connected to the scientific productivity of the Lab. The associated electronic reporting system for accelerator and hall equipment performance continues to be useful, providing a direct, common format for entering the data for all experimenters in all halls. It gives a clear, rapidly available picture of all aspects of the execution of the experimental program and, because the data is entered directly by the users, it is widely viewed as fair and accurate.

The main emphasis in FY01 will continue to be the execution of the physics program. FY01 will also see major efforts to continue the enhancement of the accelerator capabilities, including high-polarization electron beam delivery and operations for research at energies up to 5.73 GeV (a full 43% above the 4 GeV original design energy of the machine). Work will also continue towards improving availability. Maintaining and improving on our outstanding FY00 performance in operations will be a challenge as the complexity of the operation increases as a result of both multiple hall operation and the mounting of experiments with ever increasing demands on beam quality.

Summary of Performance Measures

2.0 *Delivered physics research operations*

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
6537 hrs.	8652 hrs.	150	150	Outstanding

Discussion:

This is the third year we have used this “bottom line” metric. We continue to believe it properly reflects the overall operation of the facility, and provides a firm basis for many detailed operations decisions by keeping the focus on overall physics output. As noted above, the combination of improved accelerator availability compared to the previous year, (74.6%, vs. 71.3% in FY99), hall availability that significantly exceeded our goal (88.2% vs. a goal of 75%), and hall multiplicity that significantly exceeded our goal (2.51 vs. a goal of 2.0), enabled us to exceed our goal for overall physics operations by 32%.

2.1 *Beam availability (% of scheduled availability)*

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
77.5%	74.6%	25	24.1	Outstanding

Discussion:

In absolute terms, the beam availability continued on a positive trend this year (74.6% vs. 71.3% in FY99 vs. 68% in FY98), and the adjectival rating remained as “outstanding”. The overall availability was somewhat lower than it might have been because we made the decision that the scientific benefits of 5.65 GeV running outweighed the reduced availability associated with pushing the superconducting cavities closer to their limits. We would, of course, very much like to get the availability into the mid 80% range. This would provide a significant (>10%) increase in physics output, helping with the backlog of approved experiments, and would bring the accelerator operations to a level appropriate for effective utilization of a major facility. However, with the budget levels currently available, we expect that this will not be possible. The problem of klystron failures at high power may exacerbate this problem.

Major work planned for FY01 aimed at improving availability includes: awarding a new klystron repair contract, acquiring new RF control modules (needs modifications to the existing design as some components are obsolete), new RF separator amplifier (5 kW), and improvements to the RF phase distribution system.

2.2 Experimental equipment availability (% of scheduled availability)

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
75%	88.2%	25	25	Outstanding

Discussion:

The experimental equipment generally continued to work well in FY00. This year, every Hall individually exceeded the availability goal for the year (90.7% achieved for Hall A vs. a goal of 77.5%, 93.0% achieved for Hall B vs. a goal of 73%, and 78.5% achieved in Hall C vs. a goal of 75%). The high availability for Hall A was achieved, in part, with continued significant help from the user community for maintaining and improving the equipment. The results in Hall B reflect the robust design of the CLAS and the hard work of the collaboration to enhance the reliability of this complex device. For Hall C, the improved availability compared to last year (65.2% in FY99) is due in part to the addition of two physicist positions to Hall C this year.

2.3 Effectiveness of the scheduling process (correlation between the published accelerator schedule and the actual schedule)

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
100%	97.5%	25	24.4	Outstanding

Discussion:

The experimental program was extremely successful in FY00. Seven experiments were completed in Hall A, six run groups in Hall B took data for 31 experiments completing two, and five experiments were completed in Hall C. Experiments in Hall A and B were begun on schedule and received their allocated beam time. Two major installations were completed in Hall C and both experiments were run successfully.

2.4 Overall operations effectiveness (% of the planned weeks of operations for physics that is delivered)

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
31 weeks	33.4 weeks	25	25	Outstanding

Discussion:

We were able to deliver about 7% more physics running of the accelerator than originally planned in FY00. This was a consequence of the fact that much of the “facility development” time was devoted to physics running this year because of reduced development needs for the accelerator.

3. Production of Scientific and Technical Manpower

Overview

PM	Description	Point Value	Points Awarded	Goal	Raw Score*	Adjectival Rating
3.0a	Number of student years per year on Jefferson Lab related research or technical activities	35	34	1075	1036	Outstanding
3.0b	Total number of advanced degrees per year based on Jefferson Lab research	25	25	53	67	Outstanding
3.1	Number of advanced degrees per year granted by minority universities and based on Jefferson Lab research	5	5	6	6	Outstanding
3.2	Participation of students from groups traditionally underrepresented in physical science and engineering fields	10	9	376	332	Outstanding
TOTAL SCIENTIFIC & TECHNICAL MANPOWER		75	73			Outstanding

* Components of these raw scores are weighted. See formulas used to calculate scores under discussions of performance measures on following pages.

Many of the performance measures in this performance objective area were baselined in FY96. FY97 was the first year for which a complete set of such scores was available. In FY00 we have built upon previous efforts to gather our results in a more comprehensive manner thanks to increased cooperation of our users.

As in previous years, a Jefferson Lab Users Group Survey formed the major component of our data-gathering effort. In this year's survey we provided respondents with an easy means of submitting a "no students" reply by promptly returning the electronic mail survey with that two-word phrase in the subject heading. As a result, we had more than 200 replies to our initial request within hours of sending it out. It should be noted that we have over 600 users on approved experiments within our users group of 1,440. Furthermore, the detailed responses received from nearly 400 of our users are indicative of considerable willingness on the part of our user community to assist in gathering these important data. In addition to our e-mail survey, we have a run a crosscheck of respondents against known users and known Jefferson Lab graduate students.

Two weeks after the initial survey, a follow-up message was circulated to be certain that active users had not forgotten to respond. As a result of our two requests, the FY00 survey is believed to be more statistically accurate than those of previous years. In the latter days of these data-gathering efforts, we telephoned 1 in 15 of the non-respondents in order to make a statistical determination of the number of student participants missed by our e-mail requests. About a hundred follow-up phone attempts were initiated.

In FY2001, we will continue to remind users one or more times throughout the year to encourage them to track and report these data. We can thus expect to get prompt replies at the end of FY2001 and also ensure that users not overlook the production of advanced degrees that occurred earlier in the fiscal year. We will also make our electronic survey clearer and somewhat more detailed in order to gain as much direct information as possible.

Jefferson Lab continues to be strongly involved with the development of research programs and the corresponding production of advanced degrees at Historically Black Colleges and Universities (HBCUs) and at Minority Educational Institutions (MEIs). Most of the seven HBCUs and MEIs with which we have memoranda of understanding (MOU) agreements have only recently begun to award significant numbers of advanced degrees. During the past fiscal year, Jefferson Lab maintained MOUs with the following HBCUs and MEIs.

Florida International University
Hampton University
Norfolk State University
North Carolina A&T
North Carolina Central University
New Mexico State University
University of Texas at El Paso

In FY97, FY98, and FY99, four advanced degrees (three MS, one PhD) were granted each year by those institutions based on Jefferson Lab MOUs. In FY00, two PhDs were awarded by those institutions. Although these absolute numbers are small, they represent a disproportionate fraction of U.S. minority degrees offered in physics and reflect an upward trend in the participation of minority students in physics research.

This is the fourth year in which actual numerical data were used. In previous years, however, we extrapolated from a smaller population to develop what we believe were fairly accurate assessments of our performance in the production of scientific and technical manpower. The comprehensiveness of our FY00 data validates our previous assessments. In FY01, we will continue to carefully review the point allocation among the four measures in this performance objective to continue to ensure that the emphasis and points are properly balanced among the four very important aspects of this objective and accurately reflect the purpose of our efforts.

Principal Areas of Emphasis for FY2001

Continue to exploit the Student Affairs Office to facilitate and enhance the student experience at Jefferson Lab and encourage the research effort at the Lab to become more efficient at production of trained manpower in physics and related technical fields.

Expand the involvement and opportunities for students during their work with Jefferson Lab. In particular, we will continue to increase the activities of the graduate student association with monthly seminars organized and presented by the students and other activities to welcome and integrate new students into the student community. In FY00 a student representative was elected to the User's Group Board of Directors for the first time. We also have initiated a summer course in nuclear and particle detectors intended principally for students. That course was well attended in Summer 2000 and will be enhanced and expanded for Summer 2001.

Jefferson Lab is now actively producing data from the three experimental halls, allowing timely progress in Ph.D. studies. In addition, many theoretical graduate students are closely associated with the laboratory. We will seek in FY01 to further publicize these unique opportunities among present and potential users of Jefferson Lab.

The statistical analysis of small numbers, as in section 3.1, can show large percentage variations from year to year. We suggest that a more accurate assessment of this particular aspect of our manpower production might be obtained by reporting the average over three previous years of the production of advanced degrees by minority universities. We thus suggest that section 3.1 be modified beginning when we report for FY2001 to reflect the average of the three years ending with a given fiscal year.

Summary of Performance Measures

3.0a Number of student years per year on Jefferson Lab-related research or technical activities

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
1075	1036	35	34	Outstanding

Discussion:

This performance measure is based on a Weighted Student Involvement Index (WSII) defined by:

$$\text{WSII (Weighted Student Involvement Index)} = 1(\text{HSS}) + 2(\text{UGS}) + 4(\text{GS})$$

where HSS = High School Students, UGS = Undergraduate Students, and GS = Graduate Students

The FY00 WSII score is: $\text{WSII} = 1(5.5) + 2(74) + 4(220.6) = 1035.9$

3.0b Total number of advanced degrees per year based on Jefferson Lab research

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
53	67	25	25	Outstanding

Discussion:

In FY00, there were 25 advanced degrees (4 Masters and 21 PhDs) awarded that were based on Jefferson Lab research. This performance measure is based on a Composite Degree (CD) Index defined by:

$$\text{CD (Composite Degrees)} = 1(\text{MD}) + 3(\text{PHD})$$

where MD = Number of awarded Masters degrees and PHD = Number of awarded PhDs

The FY00 CD score is: $\text{CD} = 4 + 3(21) = 67$.

3.1 Number of advanced degrees per year granted by minority universities and based on Jefferson Lab research

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
6	6	5	5	Outstanding

Discussion:

In FY00, two PhDs were awarded by minority institutions based on Jefferson Lab research. The score of this performance measure is based on the following equation:

$$\text{CDM (Composite Degrees Minority)} = 1(\text{MD}) + 3(\text{PHD})$$

where MD = Number of awarded Masters degrees and PHD = Number of awarded PhDs

The FY00 CDM score is: $\text{CDM} = 3(2) = 6$.

As was mentioned above under “Principal Areas of Emphasis”, we propose a modification of item 3.1 in future fiscal years to show a summary of the average of such production over the

previous three fiscal years. Such a change would serve to reduce the rather large fluctuations that can occur in such a small statistical sample.

3.2 Participation of students from groups traditionally underrepresented in physical science and engineering fields

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
376	332	10	9	Outstanding

Discussion:

In contrast to previous years, this year’s Minority Student Involvement index is based on numerical values rather than percentages. The Minority Weighted Student Involvement Index for women and underrepresented minorities is:

$$MWSII = 1(MHSS) + 2(MUGS) + 4(MGS)$$

Where: MHSS= Women or Minority High School Students
MUGS= Women or Minority Undergraduate Students; and,
MGS= Women or Minority Graduate Students

Students who qualify for more than one category can be counted more than once.

We note those figures shown in performance measure 3 are based on multiplicative factors and thus are greater than the actual numbers of students.

4. Corporate Citizenship

Overview

PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
4.0	Public participation (in effective person-hours per year)	20	20	80,000	80,090	Outstanding
4.1a	Public visibility: number of newspaper and magazine articles and number of radio and television programs mentioning Jefferson Lab and its science and technology	7	7	400	480	Outstanding
4.1b	Percentage of these citations mentioning DOE	3	3	>90%	100%	Outstanding
4.2	Customer satisfaction	5	4.7	>90%	93%	Outstanding
SUBTOTAL PUBLIC OUTREACH		35	34.7			Outstanding
4.3	Non-DOE investment in Jefferson Lab initiatives (including direct dollars, manpower costs, and contributions in-kind)	20	20	2% - 2.5% of JLab ops budget	\$3.25M	Outstanding
4.4	Intellectual property generation as indicated by the annual number of: <ul style="list-style-type: none"> • Patent applications • Patents awarded • License agreements 	10	10	5 or 1 or 2	11 3 1	Outstanding
4.5	Benefit to partners based on the results of a mutually agreed customer survey where the customer indicates level of satisfaction on a 1 to 5 (highest) scale	10	9	5	4.5	Outstanding
SUBTOTAL TECH TRANSFER		40	39			Outstanding
TOTAL CORPORATE CITIZENSHIP		75	73.7			Outstanding

Public Outreach

Jefferson Lab's approach to strong community relations and public outreach efforts starts with top management. The Director continued to sit on community boards that span the multi-city region such as the Hampton Roads Partnership Executive/Technology Committees and the Peninsula Alliance for Economic Development. These efforts will be continued by the Interim Director. Other Lab staff are actively involved with and serve as members of committees and boards including the Jefferson Center for Research and Technology Committee, the United Way of Virginia, the Cooperating Hampton Roads Organization for Minorities in Engineering, the Newport News Environmental Commission, and the Newport News Chamber of Commerce Business and Education Council.

Through this interaction with city officials, state delegates, local business leaders, and the citizens of the community, the Lab communicates information to the community and obtains their feedback. This both strengthens our involvement with the community and serves to educate and inform the public of Lab activities. Our public outreach activities are conduits to the citizens of this region and evidence our integration as a responsible member of the community. Through our community involvement, community members have the opportunity to raise questions. Consequently, issues can be resolved before they become problems.

FY00 results in Corporate Citizenship demonstrate the continued diligence of the entire Jefferson Lab staff who engage the public in science activities, including conducting tours, volunteering for outreach events, and giving public lectures to civic groups. These efforts show our responsibility to the community and result in continued goodwill.

Emphasis for FY01 for Public Outreach:

Public Open House in April-May timeframe

Continued emphasis in media coverage in trade and technical journals.

Continue to work on Physics Enhancement for Science Teachers and increase enrollment for next summer.

Technology Transfer

Jefferson Lab's FY00 Technology Transfer program continued its success with the IR free electron laser (FEL) by operating the device more than 1,000 hours of user time. The FEL project was also funded with a \$10M appropriation to begin an upgrade of the FEL to 10 kilowatts. A follow-on appropriation of \$5M for the 10 kW IR Upgrade and \$3M to initiate the 1 kilowatt UV FEL are included in the FY2001 Department of Defense budget. Another significant event was the donation of a compact superconducting synchrotron by industry that will be linked to the FEL when funding is identified.

During limited FEL operation in FY00 using state funding, experiments were run that show the true capabilities of the FEL are unique for both basic and applied science. Four user labs were commissioned during the year. Applied science experiments showed: that pulse laser deposition of metal films have a low defect rate; a high rate of hole drilling with a focused beam; and polymer ablation/deposition measurements show significant on-resonance effects. The FEL is run every quarter for approximately 4 weeks to give basic and applied science experimenters beam time in the most cost effective manner the FEL operations group can achieve.

The FEL itself is proving to be a very stable machine that continues to achieve firsts in the field. FY00 firsts included achieving 5th harmonic operation (first observation) and the highest power in the 3rd harmonic. High brightness short pulse x-rays were demonstrated and one user result was published in Physical Review Letters.

Progress continued in the development of a basic science user program for the FEL. Gwyn Williams (formerly of Brookhaven National Lab) was hired in FY00 as the FEL Basic Science Program manager and is now responsible building the basic science program and garnering DOE support in the Basic Energy Science office in the form of funding. The experiments conducted by research groups from College of William and Mary, Vanderbilt University, Rennsaelear Polytechnic Institute, Norfolk State University, and Princeton University resulted in interesting science on topics including carbon nanotubes, defects in silicon, protein dynamics, high sensitivity spectroscopy, and terahertz radiation generation. User groups continued to win research grants from federal agencies for FEL user experiments.

The serendipitous donation of the compact superconducting synchrotron by industry will allow the FEL to extend its capabilities into unique areas of research. Funding to relocate and re-commission the synchrotron will be sought using two avenues. \$3M will be requested from the Commonwealth of Virginia for the building addition to the FEL facility to house the ring. A second \$3M request will be sent to the Commonwealth Technology Research Fund for set-up costs in collaboration with Virginia Commonwealth University. This added machine capability at the FEL has excellent potential to train engineering and science researchers and students in the fields of microelectronics and microelectronic-mechanical systems (MEMS).

Despite the continued efforts of FEL management, no long-term funding source has been identified to support FEL operations. Lab management, supported by peer reviews in FY99 and FY00, continued to work with the DOE, Department of Navy and the Commonwealth of Virginia to identify appropriate funding sources. With the reduced complexity of the proposed upgrade to the IR Demo with just three cryomodels and a single recirculation arc, the upgraded FEL can produce more than an order of magnitude increase in IR power (to greater than 10 kW) and kilowatt level powers in the UV. Such a combined design interested the scientific, industrial and defense communities. In FY00, the Lab was successful in working with the Office of Naval Research to identify \$10M of FY00 DoD funds to begin the 10 kW upgrade of the IR Demo. This funding arrived in June 2000 and is being used to complete the design and to develop critical technologies including the wiggler, high voltage cryomodels, prototype cavity, and injector improvements. With the delay in funding approval by Congress and the expected receipt of funding, SURA stepped in with a start-up contribution of \$550k to fill the gap in funding. The contribution was essential in launching the project as expeditiously as possible. Follow-on phase two of the project will complete all the hardware and fund installation and commissioning. The FY01 Department of Defense appropriation bill includes \$5M for this activity. The Air Force Research Laboratory is also providing \$3.2M in FY01 funding to extend the capabilities of the FEL into the ultraviolet range. This project will be worked simultaneously with the IR upgrade project to take advantage of efficiencies of manpower and resources.

The Applied Research Center (ARC) on the Jefferson Lab campus continues to build collaborations and serve the business community with access to local university technical talent in the consortium. The ARC universities, in collaboration with Jefferson Lab, successfully completed the second year of operation of the Center for Photon and Plasma Processing, a \$2M grant from Virginia's Center for Innovative Technology.

The Lab continues to play an active role in local, regional and state organizations that promote economic development through partnerships and other technology transfer activities. The Lab Director and the Technology Transfer Manager serve in organizations such as the Hampton Roads Partnership, the Hampton Roads Technology Council, the Peninsula Alliance for Economic Development, and the Newport News Economic Development Council.

The Lab's performance with regard to generating, protecting, and transferring intellectual property continues to rate *Outstanding*. Eleven patent applications were filed, and three patents were awarded. We completed a solicitation for license and commercialization plans for a new suite of patents that the lab has on medical imaging probes and awarded the license to Dillon

Technologies, Inc. The Lab also continues to participate in the DOE’s SBIR program and currently has four active partnerships underway. Three CRADAs were continued in FY00.

Performance measures should remain unchanged for FY01.

Principal areas of emphasis for FY01:

Continue the upgrade project to the IR Demo FEL

Complete user experiments as resources allow

Assist the development and growth of the ARC laboratory programs

Continue the nurturing and growth of medical imaging technology

Establish user fees/costing arrangements for the IR Demo FEL User Facility

Summary of Performance Measures

Corporate Citizenship – Public Outreach

Public participation (in effective person-hours per year):

[Number of student hours + number of public hours + 10 * number of teacher hours] per year, including visits, external public talks, science series, open house, BEAMS, etc.

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
80,000	80,090	20	20	Outstanding

* As agreed upon in the Performance Evaluation Plan, this goal is reduced from 105,000 to 80,000 due to lack of DOE funding for the TRAC program.

Discussion:

The Lab is committed to raising awareness of and advancing the nation's science education and literacy as evidenced in the results of the Public Participation metrics, particularly through our K-12 Science Education Outreach. The BEAMS (Becoming Enthusiastic About Math and Science) program is the centerpiece of that effort. The BEAMS program enhancements include the participation of all 6th, 7th, and 8th grade students from two schools with the most "at-risk" students in the surrounding area. This year Jefferson Lab added a new component to the educational enhancement programs for science teachers. The Physics Enrichment of Science Teacher (PEST) program is a 4-week mini-course in physics taught by physics professionals including Jefferson Lab scientists. Twenty-two teachers participated in the program from around the region. With the positive feedback received from this inaugural course, Jefferson Lab hopes to have 36 teachers enroll next summer. Additional activities in science education include classroom visits and local and regional science fair judging. Education staff provide teacher in-service activities, including access to the Lab’s expertise and equipment, to more than 800 teachers a year. The Lab also participates in fourteen regional business and education partnerships.

4.1(a) Public Visibility “V”: Number of newspaper and magazine articles and number of radio and television programs mentioning Jefferson Lab and its science or technology

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
400	480	7	7	Outstanding

4.1(b) DOE Citation: Percent of the articles featuring Jefferson Lab that mention DOE

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
>90%	100%	3	3	Outstanding

Discussion of 4.1a-b:

Public visibility of DOE and Jefferson Lab continues to be enhanced through the use of the media and our Web site. Local and regional news articles covered a number of events and subjects related to Jefferson Lab, including the departure of Hermann Grunder to Argonne National Lab, breast imaging technology, public lectures, science education activities, and new funding for the FEL. On the national front, the Lab caught the attention of the nationally read newspaper, *Newsday*, which featured the entire Lab and its physics program and the FEL. The nuclear physics program was covered in *American Scientist* magazine as well as several other trade journals which are circulated nationally and internationally. The Internet—which provides a global presence—continues to be more prominent in our metrics as more newspapers offer online versions of their articles.

The Public Affairs staff is placing more emphasis on relationship building with the media by visiting writers at their headquarters and being more proactive in maintaining frequent contact. A new portion of the Web site was implemented this year—the Journalist’s Newsroom—developed specifically to provide information which would be of interest to the media. This include basic facts, news releases, good downloadable photographs, and a way to sign up for press releases. The press release requests have proven to be a good way to build up a database of interested journalists that will cover the Lab in a positive manner.

4.2 Customer Satisfaction

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
>90%	93%	5	4.7	Outstanding

The Lab holds an open house every other year, and the FY01 open house is now being planned. This popular community event will again endeavor to show the public in a non-threatening manner the science and activities of Jefferson Lab and affiliated science organizations. Other outreach activities in FY00 included tours for industry and government officials and participation of Lab staff as speakers to civic groups.

All performance measures for Public Outreach and Improved Scientific Literacy are appropriate and should be retained for FY01. However there is an effort underway by DOE and the Laboratory Communications Council (LCC) to develop metrics that better measure the entire public affairs function rather than individual components like the present JLab metrics. These new metrics are being developed using best practices studies and the collective experience of the Public Affairs professional community. Toward this end, a workshop was sponsored by DOE Office of Science in November, 2000 where this issue was studied in depth and a white paper has been commissioned by DOE in cooperation with the LCC on the results of this study. The LCC and the DOE Office of Science hope to have some new suggested metrics by the JLab mid-year review.

Corporate Citizenship – Technology Transfer

4.3 Non-DOE investment in Jefferson Lab initiatives (including direct dollars, manpower costs, and contributions in-kind)

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
2% - 2.5% ops (\$1.42M - \$1.78M)	\$3.24M	20	20	Outstanding

Discussion:

Various technology transfer projects totaled \$3.24M, which is approximately 4.6% of the Lab's \$71M operating budget.

Funding Sources	Contributions (\$k)
Varian/ODU Jlab CRADA (Contribution)	\$100
Varian/ODU Jlab Cooperation	70
Varian Sponsored Workshop	5
Dilon/Jlab CRADA (Funds In)	48.8
Dilon/Jlab CRADA (Contribution)	88.5
FEL cost sharing by SURA	304.8
HELIOS cost sharing by SURA	39.1
FEL Sharing by the State	608.8
FEL Partner's Contributions (Estimated Value)	100
CIT Grant to ARC	250
NNHRA-Welfare to Work	17.3
Guidant-Heart Stent Irradiation	16.6
NIH-Amplifier Assemblies	9.6
USN-FEL	1,056
PSI-Work for Others	44.9
MSU-Work for Others	471.5
HU-Welds	9.5
TOTAL	3,240

4.4 Intellectual property generation as indicated by the annual number of:

- (a) patent applications
- (b) patents awarded
- (c) license agreements

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
5 patent applications OR 1 patent awarded OR 2 license agreements	11 3 1	10	10	Outstanding

Discussion:

Jefferson Lab's production of original technology developments continued in FY00:

11 patent applications were executed

3 patents were awarded to the Lab and inventors

1 license agreement was executed

4.5 Benefit to partners based on the results of a mutually agreed upon customer survey where the customer indicates level of satisfaction on a 1 (lowest) to 5 (highest) scale.

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
5.0	4.5	10	9.0	Outstanding

Discussion

The general response from the technology transfer partner surveys is very positive. Jefferson Lab's working relationships with partners remains healthy, because the exchange of information and ideas is bi-directional.

5. Environment, Health and Safety

Overview

5. Quality Performance in Environment, Health, and Safety						
PM	Description	Point Value	Pts Awd	Goal	Raw Score	Adjectival Rating
5.0a	Occupational Injury Cost Index	35	35	50% better than DOE lab average	83% better	Outstanding
5.0b	Environmental Exceedances	20	20	4 times as good as the DOE complex average	No exceedances	Outstanding
5.1	Lost Work Day Case Rate	15	14	50% better than DOE lab average	JLab = .94 DOE labs = .98	Outstanding
5.2a	Reportable Radiation Exposures	4	4	Satisfactory ALARA program; no exposures >80% of ORPS threshold	Better than satisfactory program	Outstanding
5.2b	Hazardous Substance Exposures	4	4	No exposures above OSHA action level	No reportable exposures	Outstanding
5.3	Solid Waste Recycled	6	6	Exceed FY94 baseline ratio by 44% (increase from 15% in FY99)	Exceeded goal	Outstanding
5.4a	Radioactive Waste Generation	4	3.8	>90% of radioactive waste generated for useful purposes	No radioactive waste transported for disposal	Outstanding
5.4b	Hazardous Waste Generation	4	3.2	Produce <.25 of maximum useful hazardous waste	.51	Good
5.5	Peer Review of the Radiation Control Program	4	3.7	Appropriate program = 100	85 (= 92.5% of points available)	Outstanding
5.6	“Highly Protected Risk” Rating for High-Value Facilities	4	3.4	All facilities meet highly protected risk designation	93% highly protected	Excellent
TOTAL EH&S		100	97.1			Outstanding

Major Achievements

Jefferson Lab’s EH&S program is fully integrated, effective, and appropriate for our risks. The best indicator of EH&S performance for FY00 was the absence of serious injuries, environmental exceedances, overexposures to hazardous substances, and overexposures to radiation.

Environment, Health, and Safety (EH&S) was covered in two significant Lab reviews—the Administrative Peer Review and the Institutional Management Review—in FY00. In addition, the second Radiation Control Peer Review was conducted in August 2000. The Peer Review panel determined that Jefferson Lab’s program is appropriate. Major reports submitted include the ES&H Budget Formulation Submission (formerly the ES&H Management Plan), and the annual Site Environmental Report. The ES&H Budget Formulation Submission was expanded by the Office of Science (SC) in FY00 to include infrastructure and security program aspects. (The report is now called the ES&H, Infrastructure, and Security Budget Formulation Submission.)

The Lab experienced only one reportable (under the DOE occurrence reporting system) event in FY00. In September, the Hall C cryotarget sustained approximately \$25K in damage. No personnel injuries resulted from this event and the potential for personnel injury did not exist. An investigation team was reviewing the event at the end of FY00.

Progress in FY00

A basic premise of Jefferson Lab's EH&S program and the Lab's Integrated Safety Management (ISM) Plan is the commitment that line management bears primary responsibility for EH&S issues in its areas of operation. Consequently, the EH&S effort is accomplished programmatically by line managers who receive advisory input from EH&S specialists assigned throughout the organization. EH&S specialists also serve as a functional resource for the Laboratory as a whole. To further enhance line ownership of EH&S, Jefferson Lab formally instituted comprehensive line self-assessments in FY97. Self-assessments performed by line managers evaluate performance as well as EH&S aspects of individual and departmental responsibility. The line self-assessment (LSA) program continued to mature during FY00, further strengthening the integration of EH&S with management accountability. Following successful completion of the SC-led March 1999 ISM Verification Review, the DOE Site Office's operational awareness activities monitored continued Lab ISM effectiveness. A favorable Site Office ISM Validation Report was issued in November 1999. The Lab's ISM Plan is updated annually. In a related area, the revision of the Lab Self-Assessment Program Manual was in progress at the end of FY00. This revision will be completed in FY01 and will strengthen the linkage between LSAs and continuous improvement. The Lab's independent SA/QA function further assisted line management with their EH&S responsibilities by conducting four major FY00 topical assessments. A notable example of the Hall B assessment was the high level of attention to work coordination in a congested work area.

Progress continued with the Lab's integration of the worker radiation protection rulemaking required by the Price-Anderson Amendments Act (PAAA). There were no FY00 radiological events meeting PAAA reporting criteria. Jefferson Lab staff attended two FY00 PAAA meetings, an April 2000 EFCOG workshop, and a November 1999 TRADE PAAA meeting. The Lab's EH&S Committee, which considers broad, cross-cutting or institutional issues submitted by any staff member, continued to effectively coordinate EH&S activities. There were no open issues at the end of FY00.

Performance measure 5.6 provides for an external evaluation of Jefferson Lab mission-critical facilities to determine the fraction meeting Highly Protected Risk (fire protection) criteria. SURA's fire and property insurance carrier, Marsh and McLennan, conducted a follow-up evaluation of Lab actions to implement previous recommendations. Hall A remediation activities will be completed in FY01. These actions will address all existing issues. Another area of considerable emphasis in FY00 was an analysis by a joint team of Jefferson Lab and DOE Site staff of the new DOE radioactive waste management order. The team concluded that portions of the new order's low-level radioactive waste guidance were appropriate for Jefferson Lab implementation.

Significant Strengths

Injury avoidance performance (occupational injury cost index, PM 5.0a) was 1.8 times better than at other DOE laboratories. EH&S has been integrated into line management since 1993. The Lab has a comprehensive and user-friendly EH&S Manual that is frequently used by other DOE laboratories, industry, and universities.

Principal Areas of Emphasis for FY 2001

Conduct orientation briefings for medical services and division EH&S staff on revised OSHA injury/illness record keeping requirement changes following publication by OSHA.

Complete the implementation of new Jefferson Lab low-level radioactive waste program elements including the initial off-site shipment to an approved disposal facility.

Complete vendor fabrication and on-site delivery of an additional tritiated liquid waste monitoring system (for end station sump).

Continue ongoing 10 CFR Part 835 and other new related DOE rulemaking interfaces between the Jefferson Lab PAAA Coordinator and other Lab staff and ORO PAAA staff and other DOE-sponsored groups, such as the EFCOG PAAA Working Group, the TRADE Quality and Safety Management Special Interest Group, and the Quality Assurance Working Group.

Continue monitoring the EH&S performance measure programs of other non-nuclear laboratories that have performance-based contracts for possible Jefferson Lab use.

After project approval, establish a schedule for NEPA documentation milestones for the 12 GeV upgrade and Hall D.

The Plant Engineering Department's existing paper-based task orientation for service subcontract staff will be evaluated in FY 2001 for conversion to a computer-based mechanism.

Complete revision of the Jefferson Lab Self-Assessment Program Manual.

Performance Measures As Valid Indicators of Performance

In general, these performance measures are excellent indicators of EH&S performance. They cover all relevant areas, are quantitative, and do not require unreasonable data collection effort. However, in the event of a statistical fluctuation, a longer averaging period would have to be used to ensure statistical significance.

Performance measure 5.3, Solid Waste Recycled, was adjusted in FY 99 to provide a more challenging goal for the Lab's recycling efforts.

Jefferson Lab staff attended the DOE Contractor ES&H Management Meeting in FY 00. This meeting had a number of EH&S performance measurement presentations. To date, no EH&S performance metrics from other laboratories have been found to be appropriate for Jefferson Lab use.

Summary of Performance Measures

5.0a Cost Index

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
50% better than DOE lab average	83% better	35	35	Outstanding

Discussion:

SURA staff accident experience compared very favorably to that of other DOE research labs in FY00. The Lab result was 4.8, versus a DOE research laboratory average result of 8.8.

5.0b Environmental Exceedances

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
4 times as good as the DOE complex average	No exceedances	20	20	Outstanding

Discussion:

Jefferson Lab did not receive any environment permit NOV's during FY00.

5.1 SURA lost workday case rate

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
50% better than DOE lab average	JLab = .94 DOE labs = .98	15	14	Outstanding

Discussion:

This result for injuries resulting in one or more lost/restricted workdays (0.94) was lower than the average (0.98) for all DOE research laboratories.

5.2a Reportable radiation exposures

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
Satisfactory ALARA program; no exposures >80% of ORPS threshold	Better than satisfactory program	4	4	Outstanding

Discussion:

There were no FY00 Jefferson Lab radiation exposures requiring special reporting under the DOE occurrence reporting thresholds, and the ALARA program is rated better than satisfactory.

5.2b Hazardous substance exposure

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
No exposures above OSHA action level	No reportable exposures	4	4	Outstanding

Discussion:

There were no FY00 Jefferson Lab exposures to hazardous substances or chemicals requiring special reporting under either OSHA limits or DOE occurrence reporting thresholds.

5.3 Solid waste recycled

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
Exceed FY94 baseline ratio by 44%	Exceeded goal	6	6	Outstanding

Discussion:

Effective recycling efforts by the Plant Engineering Department, along with broad staff support for recycling, resulted in this strong FY00 showing. The performance goal for this metric was increased from 15% to 44% during FY99.

5.4a Ratio of radioactive waste produced to that produced including by unintentional processes

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
>90% of radioactive waste generated for useful purposes	No radioactive waste transported for disposal	4	3.8 ³	Outstanding

Discussion:

No radioactive waste was transported for disposal in FY00. An initial Jefferson Lab shipment of low-level radioactive waste is tentatively planned for FY01.

³ Per the Performance Evaluation Plan, a rating of 95% is assigned if no radioactive waste is generated.

5.4b Ratio of hazardous waste generated to that which would have been produced without countermeasures

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
Produce <.25 of maximum useful hazardous waste	.51	4	3.2	Good

Discussion:

This performance objective will continue to be emphasized during FY 01 by hazardous waste and division EH&S staff for possible improvement.

5.5 Radiation Control Peer Review (FY 00)

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
Appropriate program = 100	85 (= 92.5% of points available)	4	3.7	Outstanding

Discussion:

The Radiation Peer Review was held August 28-30, 2000. The Peer Review concept has worked well for the important area of radiation control. A copy of the Radiation Control Peer Review Report is included in the document as Attachment 2. The FY00 score was 85 (Outstanding) versus a score of 78 (Excellent) for the initial peer review in FY98.

5.6 "Highly Protected Risk" rating for high-value facilities

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
All facilities meet highly protected risk designation	93% highly protected	4	3.4	Excellent

Discussion:

The August 2000 evaluation review of Jefferson Lab actions to implement previous recommendations for high-value facilities received a score of 93—which translates to 86% of available points for this metric. SURA's fire and property insurance carrier conducted the review. Hall A remediation activities will be completed in FY 2001. This will address all existing issues.

6. Quality of Business and Administrative Practices

Overview

PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
6.0	Peer Review	70	61	100%	87%	Excellent
6.1	% of overrun on all projects > \$100K	1	1	≤ 8%	1.15%	Outstanding
6.2	Variance of scheduled completion time for projects > \$100K	1	1	≤ 1.10	1.0	Outstanding
6.3	% of scheduled preventive maintenance tasks completed by their scheduled due dates	2	2	≥ 94%	99.8%	Outstanding
6.4	Average % of all open corrective maintenance tasks that have been open > 3 months	2	2	≤ 10%	3.3%	Outstanding
	SUBTOTAL FACILITIES (6.1 - 6.4)	6	6			Outstanding
6.5a	% of value of property not located during the inventory cycle: Capital Property	0 ⁴	N/A	Not conducted in even years	N/A	N/A
6.5b	% of value of property not located during the inventory cycle: Sensitive Property	2+2 ⁵	4	< 1%	.25%	Outstanding
6.5c	% of value of property not located during the inventory cycle: Stores Property	1	1	< 1%	.8%	Outstanding
6.6	% of values of Inventory Stores reduced	1	1	22%	23%	Outstanding
	SUBTOTAL PROPERTY (6.5 – 6.6)	6	6			Outstanding
6.7	Number of CAS violations	1	1	0	0	Outstanding
6.8	Dollar % of invoices deemed unallowable	1	1	< 1%	0%	Outstanding
6.9	% of vendor invoices paid with discounts lost	1	1	< 1%	.07%	Outstanding
6.10	% of annual actual cost variance from budget for each overhead pool	1	1	< 3%	.34%	Outstanding
6.11	Number of occurrences that Cost Management Report had to be resubmitted to Contracting Officer – DOE Site Office	1	1	0	0	Outstanding
6.12	Number of audit errors in travel expense reports	1	1	< 2%	0	Outstanding
	SUBTOTAL FINANCE (6.7 – 6.12)	6	6			Outstanding
6.13	Average procurement cycle time	3	3	< 14 days	9.09 days	Outstanding
6.14	% of total available purchasing dollars awarded to: small business concerns, small women-owned business concerns, and small disadvantage business concerns	SB 1 WO1 SD 1	1 1 1	≥ 45% ≥ 6% ≥ 6%	62.6% 8.7% 8.6%	Outstanding
	SUBTOTAL PROCUREMENT (6.13 – 6.14)	6	6			Outstanding

⁴ Capital equipment is inventoried biannually in odd years.

⁵ Points from measure 6.5a are assigned to measure 6.5b in even years, giving 6.5b a total of 4 points.

PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
6.15a	% of action oriented diversity commitments as established in the Affirmative Action Plan	1	1	≥ 90%	100%	Outstanding
6.15b	Representation of protected classes within each EEO-1 category	1	.85	100% maintained	90%	Excellent
6.16	Sustainable EEOC charges	1	1	0	0	Outstanding
6.17	Compensation positions aligned with market practices	1.5	1.2	± 3% of market average	- 3.7%	Excellent
6.18	% of 3-year rolling average of annual increases in premium cost relative to market	1.5	1.5	≥ -5%	-6.4%	Outstanding
SUBTOTAL HUMAN RESOURCES AND SERVICES (6.15 – 6.18)		6	5.6			Outstanding
TOTAL QUALITY OF BUSINESS AND ADMIN PRACTICES		100	90.6			Outstanding

Division Assessment

The Administration Division has continued to provide “exceptionally fine support⁶” despite undergoing significant change in the past year. A new Director of Human Resources and Services arrived in June 2000, solving a peer review identified leadership situation so effectively that the HR&S Director was listed as a “+” by the FY00 Institutional Management Review team. The Director of Plant Engineering retired and was subsequently replaced, and the Division also hired a new Administrator near the end of the year. Additional workload brought on by the SNS and FEL projects was handled with little disruption to the quality service Administration Division customers have come to know and expect. The FY00 Administrative Peer Review panel concluded the Division had achieved a rating of “Excellent” with the primary shortfall being in Human Resources and Services owing to the aforementioned leadership challenge.

The secondary indicators reported herein are congruent with the findings of the Peer Review. Of the 20 measures reported this year, 18 received ratings of Outstanding and 2 received ratings of Excellent (both in HR&S). No measure was rated below Excellent. These scores reflect continued hard work on the part of the entire Administration Division staff; department specific accomplishments are detailed below.

Plant Engineering

Plant Engineering leverages its resources through an effective outsourcing program for security, housekeeping, refuse collection and disposal, pest control, material management, meeting room setup and moves, grounds maintenance, mechanical system maintenance, electrical (high and low voltage) maintenance, fire protection systems maintenance, control system maintenance, cooling water chemical treatment, plumbing, and painting. The majority of these contracts are firm-fixed-priced. The Lab Plant Engineering staff monitors services provided through this outsourcing to ensure quality.

A major accomplishment for plant engineering was the design of three major construction projects - North and South Access Buildings Extension valued at \$450K, Test Lab Addition

⁶ Report from the Panel, FY 2000 Administrative Peer Review

valued at \$1,000K, and the CHL Pit valued at \$200K. In-house staff in addition to their day-to-day maintenance tasks designed the first two projects, saving approximately \$116K in consultant fees. Also during this period, Plant Engineering staff has worked closely with the Physics Division to develop the Hall D concept and the City of Newport News in the development of ARC II Building design.

Plant Engineering continues to respond to DOE's increased emphasis on safeguards and security. An updated Export Control policy has been developed for approval, and procedures have been drafted. The DOE common badge is being developed and DOE directives are being studied for implementation into an Updated Security Plan.

Property management maintained its low property loss rates and recycled a total of 124,838 pounds of scrap metal and 14,874 pounds of ADP equipment, and donated a total of \$323,167 of surplus property to schools.

In response to the previous year's hurricanes, floodgates for the truck ramps of the Halls and the Free Electron Laser Building were installed to alleviate the potential for flooding in the future. Also, a french drain was installed in the north and west side of the Counting House to eliminate ground water leakage into the building during heavy rains.

The Electrical/Mechanical Section has continued to provide needed support to the Laboratory. Examples of the groups accomplishments are listed below.

- Mechanical: Installed new resin system for Building 95, major repairs to HVAC systems including the ARC building. Designed and installed backup air conditioner in Hall A.
- Electrical: Installed emergency generators for backup power to critical systems on site. Installed extra power on Hall B space frame.
- Fire Protection: Completed initial CANS hardware and software installation.
- Facility Access: Modified gatehouses with gates and readers (using CANS), and implemented new badging and entry procedures.
- Energy Conservation: Screened energy conservation contractors, and coordinated our research efforts with contractor site visits and proposal preparation.

Business Services

The Business Services Department implemented organizational changes and added staff to address the new requirements generated by the SNS and FEL programs. Some of these changes included:

- Designation of a Contracting officer as the point of contact for the SNS procurements
- Addition of three procurement FTE's to support the increased workload from the FEL and SNS projects.
- Addition of one financial analyst to enhance the reporting and analysis provided to the Lab
- Addition of a Travel Supervisor position to provide travel training to Lab staff, and to further develop and implement travel program enhancements
- Dedication of a Financial Services Group to identify and address the organization's needs for financial information and analysis.

In addition to these changes, enhancements were made to existing programs and processes. These included:

- Electronic upload of Procurement Credit Card data into Costpoint, eliminating data entry
- Significant expansion of Business to Business E-Commerce capabilities
- Expansion of Web-based financial reporting to include travel commitments, summary reports by Budget and Reporting codes, and drill-down capabilities on requisitions.
- Implementation of the Travel Credit Card Program

For the past ten years, we have exceeded our socio-economic goals for conducting business with small, small disadvantaged, and small woman-owned businesses. During these ten years, we were awarded the Secretary of Energy's Small and Disadvantaged Business Subcontracting Award 5 times and awarded Oak Ridge M&O Contractor of the Year Award twice. In spite of the challenges presented by increased credit card usage and electronic purchasing, we succeeded in meeting ambitious socio-economic goals in FY2000. FY2001 will be even more challenging, as the socio-economic goals have expanded to include mandated Hub-zone and Small Business goals.

Business Services, specifically Procurement, was the subject of in-depth examination as part of the FY00 Administrative Peer Review. The Peer Review Team rated the procurement and financial areas "Outstanding." An important factor for this rating was the very favorable report issued by the customer feedback committee regarding the efficacy of financial and procurement services provided by Business Services staff.

Division Environment, Health, and Safety

The division EH&S office increased its focus on subcontractors in FY00. New service subcontractor staff now receive a more thorough JLab-specific orientation by the SOTR that includes as a minimum reading and discussion of all work-control documentation that pertains to his or her activities. Subcontractor staff likely to engage in higher risk tasks (e.g. electrical service work) also are given a field orientation by the SOTR and/or an experienced colleague that culminates in demonstrated proficiency for certain tasks. Several multi-year service subcontracts have been awarded where the bidders' workers' compensation experience rating was among the criteria in a best-value award process.

In the Medical Services area, which had as an improvement goal to implement a new information system, Occupational Health Manager software is now being used for all new medical information record-keeping, scheduling, nurses notes, and encounter tracking. The new system is updated with existing chart and other medical information when a staff member's medical records are accessed for any reason. One of the part-time nursing positions was increased to full time to accommodate the significant SNS-related hiring and to enhance the consistency of tracking operational information.

Human Resources and Services

The Human Resources and Services (HR&S) department provides a variety of services through functional units including compensation and benefits, employee relations, employment,

information resources, staff services and training. This year HR&S initiated several changes within the organization to provide more efficient quality customer service:

- Employee Relations and Employment were consolidated under a single manager.
- An Employment Representative was designated for each Lab division.
- Training and Performance was brought into the HR&S department.
- Information Resources was restructured to report directly to the HR&S Director.

Advances in technology have increased our efficiency as well as the range of services provided. We have purchased and developed an implementation plan for a Human Resources Information System that will allow us to maintain one database with all the necessary information that also integrates with other functional areas such as payroll. Training has transitioned from traditional classroom training to web and/or computer based self-study options, providing comprehensive services without specific time constraints. A Technical Information Specialist was hired and established a Publications and Records program. The Administrative Manual was uploaded to the web, as will be the new *Supervisor's "How-to" Guide*.

We continue to focus on attracting and retaining world-class employees. Staff Services continues to provide comprehensive logistical support services for conferences, meetings and special events while also managing the food service operations and the SURA Residence Facility. We received DOE authorization for a special market adjustment fund for employees in information technology. We also contracted with a Third Party Administrator to administer the Health Care and Dependent Care Spending Accounts, COBRA, and the Retiree Medical Programs.

Assessment of Performance Measures

Of the 23 performance measures required to assess the quality of business and administrative practices, we recommend changes to only one—in Plant Engineering (Property).

During FY00, a new metric was established for Technical Stockroom Performance as a result of the introduction of intranet ordering (e-commerce) capability for technical and office supplies. The new system allows for a significant reduction in inventory stores, and this became a more appropriate measure than inventory turnover ratio. The metric was changed in March 2000 to include the new measure, and the turnover ratio metric was eliminated. The new metric should be examined to determine if it or a new metric would accurately and appropriately measure Technical Stockroom Performance for FY01.

Future Improvement Goals and Initiatives

- ♦ Execute an education/training program for the Lab's cost account managers, travel managers, and equipment procurers in how to use the WEB reports, travel reports, and business-to-business tools.
- ♦ Work closely with the Lab's MIS committee, Budget Office and Division Administration Office to create an effective budgeting tool for Laboratory managers.
- ♦ Implement an on-line travel requisition system that facilitates the travel approval and processing system for Laboratory staff.

- ◆ Streamline the Laboratory’s payroll process through direct mailing of paychecks and advice statements and increasing staff direct deposits.
- ◆ Work closely with Accelerator Division stockroom personnel to expand utilization and business-to-business offerings of the Laboratory’s online just-in-time acquisition system.
- ◆ Review and implement cost effective portions of the Super Energy Savings Performance Contract proposal.
- ◆ Consolidate work order control systems to improve customer ease of use.
- ◆ Improve the site space management system to maximize cost effective space use.
- ◆ Complete construction of the Test Lab Addition and CHL Pit construction projects on time and within budget.
- ◆ Fully implement the HRIS system.
- ◆ Purchase and implement an Applicant Tracking system.
- ◆ Recommend revisions/enhancements to the Performance Appraisal system.
- ◆ Implement/enhance the Management Development program.

Summary of Performance Measures

6.0. Peer Review

Area Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
Division Office (Division Management, Legal, Internal Audit, Quality Assurance, EH&S, MIS)	10	9	100%	90%	Outstanding
Business Services (Finance, Procurement)	20	19	100%	95%	Outstanding
Human Resources & Services (Special Focus Area)	20	15	100%	75%	Excellent
Plant Engineering	20	18	100%	90%	Outstanding
SUBTOTAL PEER REVIEW	70	61			Excellent

Discussion

A peer review panel of six members representing DOE, ER labs, the scientific community, and industry conducted a three-day, on-site review of the effectiveness and efficiency of Jefferson Lab’s business and administrative practices. The charge requested the panel to review the major administrative functions to assess the overall strengths and weaknesses of each area.

Specifically, the review panel: determined if each area was pursuing high quality standards through relevant performance-based criteria; determined if the administrative infrastructure was pursuing its missions in a very cost effective and efficient manner; and noted any areas that merited special recognition or warranted attention for targeted improvement.

The Procurement aspects of the Business Services function was the area of the focused review for FY00. The review panel received presentations from Lab staff, interviewed the Lab’s

Associate Directors and Division Administrators and the DOE Site Office staff, and reviewed supporting documentation, including the Administration Division Departments' line self assessments. Review results are presented above and the complete report of the FY00 Administrative Peer Review is included as Attachment 3. The numerical score of 61 and adjectival rating of *Excellent* are reflections of the administrative functions. (Note: The drop in score from 63 and *Outstanding* from the previous year was due to uncertainties, at the time of the Administration Peer Review, in the leadership of the Human Resources and Services Department. With the new Director of HR&S in place since June 2000, these uncertainties have been removed and the HR&S Department is functioning very well, as noted in the Institutional Management Review.)

The Administrative Peer Review remains the key indicator for FY 2000 of the quality of the Lab's business and administrative practices. The review will be scheduled for March 2000 and will once again include as panel members representatives from ER labs, the scientific community, industry, and DOE. The Administration Division is considering some modest changes to the structure of the review itself to focus more on changes as compared to the base operations.

FACILITIES MANAGEMENT

6.1 Percentage of overrun on all projects greater than \$100K

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
≤ 8%	1.15%	1	1	Outstanding

6.2 Variance of scheduled completion time for projects greater than \$100K

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
≤ 1.10	1.0	1	1	Outstanding

Discussion of 6.1 and 6.2

HVAC Improvements to Halls A & C were awarded and completed in Hall A in FY00. The HVAC Improvements in Hall C were terminated due to impact of a new experiment. Notice to proceed of the first phase of the Central Alarm Notification System (CANS) was given on 30 November 1999. The current contract completion date is 30 November 2000 based on documented material unavailability. Metrics for this project will be included in next year's report. These measures remain valid for major construction activities and should be retained for FY01.

6.3 Percentage of scheduled preventive maintenance tasks completed by their scheduled due dates

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
≥ 94%	99.9%	2	2	Outstanding

6.4 Average percentage of all open corrective maintenance tasks that have been open for greater than 3 months

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
≤ 10%	3.3%	2	2	Outstanding

Discussion of 6.3 and 6.4

Use of a comprehensive Preventive Maintenance (PM) system continues to be viewed as essential to avoidance of lost operational (run) time due to support equipment failure. These metrics measure adherence to a thorough PM regimen covering mechanical and fire detection/prevention systems and components. The success of the effort is noted by the virtual absence of lost operational time attributable to support equipment failure. The PM envelope is reviewed continuously by Plant Engineering based on equipment error rate and cause. These measures should be retained for FY01.

PROPERTY MANAGEMENT AND PROTECTION

6.5a. Percentage of value of property not located during the inventory cycle for each of the inventories conducted -- Capital Property

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
Not required FY 00	N/A	0 ⁷	N/A	N/A

6.5b. Percentage of value of property not located during the inventory cycle for each of the inventories conducted -- Sensitive Property

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
< 1%	.25%	2 + 2 = 4 ⁸	4	Outstanding

6.5c. Percentage of value of property not located during the inventory cycle for each of the inventories conducted -- Stores

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
< 1%	0.8%	1	1	Outstanding

Discussion of 6.5

The low property loss rates exhibited in past years continued in FY00. Inventory of sensitive property was done by a statistical method that Jefferson Lab and DOE agreed to use for the first time in FY97. This outstanding level of inventory control in property is among the best in the lab system. The property control system is considered appropriate for the Laboratory—amply conservative to protect government property while embodying the practices commonly used by business to promote maximum utilization of property. This measure should be retained for FY01 as a valid measure of our performance in property management.

6.6 Store Inventory Reduction

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
22%	23%	1	1	Outstanding

⁷ Capital equipment is inventoried biannually in odd years.

⁸ Points from measure 6.5a are assigned to measure 6.5b in even years, giving 6.5b a total of 4 points.

Discussion of 6.6

The JLab Stockroom is leading the national laboratories in pioneering a new method of operating, using electronic purchasing on the Internet versus relying exclusively on maintaining a physical inventory. This use of a “virtual stockroom” provides cost savings to the Lab compared to other purchasing methods, greatly enhances the selection of items available to customers, and offers the opportunity to reduce the number of line items held in the physical stockroom inventory.

On 29 March 2000 a new metric was established for Technical Stockroom Performance. The phasing in, during FY00, of purchasing technical supplies via the intranet for just-in-time delivery of supplies will allow a reduction in the total inventory previously maintained to support the mission. In conjunction with this new program an analysis of the inventory was started to determine which items needed to be maintained based on past buying patterns, customer needs, and availability. The goal was to maintain the minimum required shelf inventory for items not easily obtained through intranet purchasing. The previous metric was *Increase inventory stores turnover ratio by 10% over previous year*. With the introduction of intranet purchasing and subsequent reduction in the overall inventory, it was agreed a better measure of performance for FY00 is *Store Inventory Reduction*. The FY00 reduction of 23% was based on a reduction in inventory of \$230,001.87 based on a total value of \$987,000 on 29 February 2000. These measures should be reviewed for revision for FY01.

FINANCIAL MANAGEMENT

6.7 Number of CAS violations

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
0	0	1	1	Outstanding

6.8 Dollar percentage of invoices deemed unallowable

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
< 1%	0%	1	1	Outstanding

6.9 Percentage of vendor invoices paid with discounts lost

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
< 1%	.07%	1	1	Outstanding

6.10 Percentage of annual actual cost variance from budget for each overhead pool

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
< 3%	.34%	1	1	Outstanding

6.11 Number of occurrences that Cost Management Report had to be resubmitted to Contracting Officer – DOE Site Office

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
0	0	1	1	Outstanding

6.12 Number of audit errors in travel expense reports

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
< 2%	0	1	1	Outstanding

Discussion of 6.7 - 6.12

All six Financial Management performance measures attained adjectival ratings of Outstanding. Items of particular note are:

- ♦ The Laboratory achieved a cost savings of \$34,949 for discounts taken this year on vendor invoices for prompt payment. This represents 99.8% of all eligible discounts for prompt payment⁹ (6.9).
- ♦ An analysis of 127 previously audited FY00 travel expense reports indicated a net required adjustment of \$27 (6.12).

PROCUREMENT

6.13. Average procurement cycle time

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
< 14 days	9.09 days	3	3	Outstanding

Discussion of 6.13

Procurement cycle time is a key indicator for procurement effectiveness not only from the standpoint of customer satisfaction but also because it directly relates to the overall productivity of the procurement process.

6.14. Percentage of total available purchasing dollars awarded to small business (SM) concerns, small women-owned (WO) business concerns, and small disadvantage (SD) business concerns

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
≥ 45%	62.6%	1	1	Outstanding
≥ 6%	8.7%	1	1	Outstanding
≥ 6%	8.6%	1	1	Outstanding

Discussion of 6.14

The small business program exceeded its small business, small disadvantaged, and woman-owned goals. The BSD has been a leader in the SB contracting area, earning national and regional recognition for its contributions to small business, small disadvantaged business, and small women-owned business concerns.

HUMAN RESOURCES AND SERVICES

6.15a Percent of action oriented diversity commitments, as established in the Affirmative Action Plan (AAP), Section VII-C, completed during the fiscal year

⁹ It is important to note that this amount only includes discounts for prompt payment and does not include catalog pricing discounts, quantity discounts, or other special discounts that were obtained by the Laboratory.

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
≥ 90%	100%	1	1	Outstanding

Discussion of 6.15a

Through aggressively seeking out opportunities and establishing relationships with professional affiliations we were able to reach all of the diversity commitments that were established. We have strived to increase internal awareness and provide effective outreach programs. Maintaining and ultimately improving female and minority representation in target job groups is a primary focus as we continue to build our scientific program. Following is a summary of commitments and accomplishments:

DIVERSITY COMMITMENT	ACCOMPLISHMENTS
1. Participate in at least three job/career fairs with high female/minority representation	<ul style="list-style-type: none"> Participated in a more than three job/career fairs. Employment Staff will participate in additional fairs when available.
2. Provide assistance to support Lab's mission of expanding minority involvement in the sciences	<ul style="list-style-type: none"> The Lab maintains a cooperative education program with local high schools and colleges with 42.3% minority representation and 46.2% female representation. Will continue to support BEAMS program.
3. Participate in pilot training program to support Welfare to Work Program	<ul style="list-style-type: none"> By the end of FY 2000, 5 Welfare to Work participants had completed the Lab's six-month training program. All are employed. The Lab hopes to expand its program by offering training in additional marketable skills to more participants. Such expansion is dependent on the ability of the Newport News Department of Housing & Redevelopment to fund participants.
4. Support the Lab's Small Business and Small Disadvantaged Business Subcontracting plan	<ul style="list-style-type: none"> The Lab's Small Business Representative: <ul style="list-style-type: none"> was an active corporate member of the Tidewater Regional Minority Purchasing Council (TRMPC). attended a DOE-wide Small Business Conference, two trade fairs and an Oakridge Operations Small Business Managers Conference. was on the TRMPC's planning committee for their annual trade fair and exposition.
5. Contact minority and female recruiting sources to announce Lab job opportunities	<ul style="list-style-type: none"> Employment staff communicated with previously identified minority and female recruiting sources, as well as identifying, connecting with and distributing current vacancies to new sources. For example, connection was made with <i>Wright Choices Inc.</i>, a state-funded non-profit organization charged with placing qualified disabled individuals.
6. Conduct targeted advertising, with particular focus on our engineering job group	<ul style="list-style-type: none"> Employment staff worked with hiring managers and the Lab's public relations manager to identify appropriate media for targeting candidates for critical computing and engineering positions.
7. Conduct salary equity review to identify any salary alignment disparities for females and minorities	<ul style="list-style-type: none"> As part of the Lab's annual compensation review, salary adjustment funds were distributed with alignment issues as a concern. As a result of the distribution of these funds, base salaries for minorities increased by 1.04% compared with 0.69% for non-minorities, and 1.57% for females compared with 0.54% for males.
8. Employment staff will continue to utilize formal (associations) and informal (employees and colleagues) networks to locate qualified minorities and females for remaining regular positions	<ul style="list-style-type: none"> For example, the Lab's search committee for a new Associate Director for the Accelerator Division utilized their informal professional network to contact a diverse candidate base. This is a continuing commitment and focus for both the Employment staff and Lab management.

6.15b. Representation of protected classes within each EEO-1 category at end of fiscal year compared to the beginning of the fiscal year (adjusted for voluntary separations).

Goal	Raw Score	Point Value	Points Awarded	Adjective Rating
100% maintained	90%	1	.85	Excellent

Discussion of 6.15b

We consistently strive to achieve the Lab’s ultimate goal of full utilization of females and minorities in all categories. We were unable to maintain our representation in the female official and minority manager category. However, we continue to be fully utilized in the female and minority categories for Scientists, Computing and Engineering. By aggressively seeking qualified female and minority candidates, we continue to strive for full utilization.

The following summarizes FY00 year-end status:

JOB CATEGORY	MINORITY %				FEMALE %			
	AVAILABILITY	REPRESENTATION		ASSESSMENT	AVAILABILITY	REPRESENTATION		ASSESSMENT
		9/30/99	9/30/00*			9/30/99	9/30/00*	
1A Officials	11.0	0.0	0.0	Maintained	19.3	14.3	0.0	<i>Not maintained</i>
1B Managers	12.3	9.5	8.5	<i>Not maintained</i>	22.0	27.0	22.4	Fully utilized
1C Buyers	20.2	40.4	28.6	Fully utilized	53.6	60.0	71.4	Fully utilized
2A Administrators	14.8	14.3	13.8	Fully utilized	44.8	60.7	79.0	Fully utilized
2B Scientists	9.4	26.3	21.5	Fully utilized	5.8	8.8	7.8	Fully utilized
2C Computing	13.7	12.5	12.8	Fully utilized	32.4	30.0	33.3	Fully utilized
2D Engineering	13.3	12.1	12.1	Fully utilized	8.3	7.3	8.1	Fully utilized
3 Technicians	16.5	17.4	19.7	Fully utilized	18.1	21.5	20.5	Fully utilized
5 Office/Clerical	24.1	35.4	40.2	Fully utilized	90.8	93.8	96.2	Fully utilized
6 Skilled Trades	22.5	22.2	21.1	Fully utilized	3.9	16.7	15.8	Fully utilized

Legend:

Maintained: Underutilized but maintained/increased representation.

Not Maintained: Underutilized and representation decreased.

Fully Utilized: Achieved/maintained full representation.

Note: EEO-1 categories where Utilization percentages meet or exceed Availability percentages are determined to be fully in compliance with this metric.

* Adjusted for voluntary separations.

6.16 Sustainable EEOC charges

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
0	0	1	1	Outstanding

Discussion of 6.16

The Lab has been pro-active in investigating issues which may have resulted in further implications. Therefore, no formal grievances or EEOC charges were filed during FY00.

This measure is a valid indicator of EEO performance and should remain unchanged in FY01.

6.17 Achieve compensation positions aligned with market practices to reflect the Lab’s mid-market compensation philosophy.

Goal	Raw Score	Point Value	Points Awarded	Adjectival Rating
± 3% of market average	- 3.7%	1.5	1.2	Excellent

Discussion of 6.17

This compensation metric aligns with the Lab’s mid-market compensation philosophy. The Lab implemented a 3.5% merit increase program across the board and focused equity adjustments to target job groups and positions. Also, in response to external market movement in the computer and information sciences profession, market-based adjustments were made for selected computer scientist positions.

This remains a valid measure of compensation performance and should be retained for FY01.

6.18 Percent of three-year rolling average of annual increases in premium cost relative to market.

Goal	Raw Score	Point Value	Points Award	Adjectival Rating
≥ -5%	- 6.4%	1.5	1.5	Outstanding

Discussion of 6.18

For the 2000 benefits premium year, we successfully negotiated reasonable premium rates for all medical insurance programs in spite of increasing rates nationally. This was based on our claims experience and our ongoing vigilance toward wellness initiatives, which promote cost containment. Overall, for FY00 the Lab experienced a increase of 10.9% in premium rates. This increase was significantly influenced by the rising costs of prescription drugs. The restructuring of prescription drug deductibles in the previous year attenuated this increase. The three-year trend in benefit costs has been very favorable when compared to the market. This valid measure of performance should be retained for FY01.

7. Responsible Institutional Management

Overview

PM	Description	Point Value	Points Awarded	Goal	Raw Score	Adjectival Rating
7.0	Responsible Institutional Management					
	• Strategic Planning	40	37	100%	92.5%	Outstanding
	• Managerial Effectiveness	40	36	100%	90%	Outstanding
	• Organizational Culture	20	20	100%	100%	Outstanding
TOTAL RESPONSIBLE INSTITUTIONAL MANAGEMENT		100	93			Outstanding

Responsible Institutional Management is a critical area for Jefferson Lab assessed via a peer review process and essential to the Lab's long-term vitality. It looks not only at how the Lab is being managed in the present, but how we are planning and preparing for the future. Several activities are reviewed as part of the assessment of institutional management, including the Laboratory's strategic planning, managerial effectiveness, and organizational culture.

Lab management considers this component of our performance critical to building a dynamic scientific future for Jefferson Lab, and therefore we have looked at these areas through internal assessment as well as incorporating the results and recommendations of previous reviews. A high-level assessment of our Institutional Management practices was critical at this juncture, as Jefferson Lab is losing its Director of 15 years, and therefore is entering a period of transition.

Findings of 2000 Institutional Management Review

The biennial Institutional Management Review was held November 1-2, 2000, and was chaired by John McTague formerly of Ford Motor Company and a member of the Laboratory Operating Board. The committee included Dr. Dave Shirley of LBNL, Dr. Rudolf Bock of GSI, Mr. Mike Telson of the Department of Energy, Professor Stan Kowalski, as a representative of the Science and Technology Review, and Mr. Jerry Jobe, representing the Administrative Practices Review. The review consisted of a day and a half of presentations from Jefferson Lab that looked at plans for all areas of the Lab's science and technology programs and operations, including business practices, communication and outreach, the ISMS program, and integration within the DOE lab system. Results of the Science and Technology and Administrative Practices Reviews were presented by Stan Kowalski and Jerry Jobe, and a presentation also was made by the User Group. In addition, Panel members had the opportunity to take a comprehensive tour of the Lab and to interact informally with Lab staff at a luncheon.

The Panel was generally very favorably impressed with what they saw and heard and provided the following feedback as part of the review closeout. (See complete report—Attachment 4.)

Strategic Planning

The panel mentioned five strong points in the area of Strategic Planning. They were impressed with the involvement of the user community in our planning efforts, as involvement in the process provides broader buy-in. The panel felt that there was a clear institutional commitment

to being a world leader in SRF technology, and that current activities contributed to that effort. Panel members felt that while the Lab had made a good beginning in making the science case for the 12 GeV upgrade, the Lab needs to work harder to find ownership in the greater community.

The panel also recognized the legacy of the long-term vision fostered by the Director, pointing out the importance of clearly articulating the roles these many inter-related initiatives will play in the evolution of the Lab. Concluding their findings in the area of strategic planning, the panel recognized that Jefferson Lab has shown itself to be a good DOE corporate citizen.

Managerial Effectiveness

Managerial effectiveness is a measure of how well our management processes enable and enhance the work of the Laboratory. Jefferson Lab has worked very hard to leverage the resources available to us to accomplish the research and advance the technology that contributes to DOE's mission. The review panel mentioned several strengths in this area as well as two areas for improvement. The panel specifically named the new HR Director as being a plus in the area of managerial effectiveness, setting a new course that is in sync with the needs and mission of the Lab. The panel was pleased that there had been a Deputy Director named, and that there were plans to hire a deputy for the AD for Administration to assist in managing his workload. The panel felt that the Lab had done an outstanding job of meeting the Lab's EH&S and administrative needs in a cost-effective manner.

Citing opportunities for improvement, the panel felt that there had been inadequate succession planning, particularly in the technical and administrative areas. They also felt that the Lab needed more depth of leadership to shape and articulate the scientific vision for JLab now and into the future.

Organizational Culture

One of the keys to Jefferson Lab performance is its staff and the culture of our organization. Jefferson Lab is a "can-do" organization with high morale and remarkable dedication. Maintaining and further enhancing this culture is very important to our continued success. The panel noted several strong points in Lab performance in this area. They recognized the value and quality of Jefferson Lab's educational outreach and the impact it is having in the community. In a similar vein, they were very impressed that Jefferson Lab played an integral role in the surrounding community, and they felt that this was essential to continued good relations.

Throughout their visit, panel members were impressed by the way in which staff members identified with the Lab and took real pride in being part of the Laboratory. The panel felt that in general, internal communication is excellent, but that the articulation to the staff of resource prioritization processes and decisions could be improved, especially as it relates to the many initiatives going on in the Laboratory. The panel also noted a broad appreciation among management and staff of the benefits of having a diverse staff. They were impressed not only by the attitude represented but by the statistical data that demonstrated that commitment.

Conclusion

Jefferson Lab, during this period of transition, must be committed to building on strengths and addressing identified weaknesses. The Institutional Management Peer Review has shown an institution that is healthy and well-managed, with the right balance of current performance and laying groundwork for the future. This is perhaps one of the most pivotal periods in the life of any institution, and the results and recommendations from this review will provide valuable guidance as we move into the future.

Principal Areas of Emphasis for FY2001

- Develop the depth of scientific leadership necessary to carry forth the scientific vision for the Laboratory.
- Build support necessary to make 12 GeV upgrade a part of the Long-Range Plan, supported by the larger community.
- Complete the 10 kW upgrade of the FEL, and prepare to take advantage of the enhanced scientific capabilities that will come with the Helios synchrotron.
- Continue to develop strong support within the basic science community for the FEL, including accomplishment of some key user experiments
- Continue vigilance and performance within the areas of ISMS and security, maintaining cost-effective, value added service to staff and users.
- Work in conjunction with the lab system to participate in and benefit from high-end computing capabilities.
- Work to increase internal understanding of priorities and resources available.