Department of Energy
Committee Report

on the

Facility Operations Review

of the

B-Factory
at the Stanford Linear Accelerator Center

April 2006

EXECUTIVE SUMMARY

The Department of Energy (DOE) review of B-Factory Operations at Stanford Linear Accelerator Center (SLAC) was conducted on April 26-27, 2006 at the request of Dr. Robin Staffin, Associate Director for the Office of High Energy Physics. The purpose of the review was to evaluate the performance of B-Factory operations (since the June 2004 DOE review) and assess the resource requirements and management practices needed to effectively support its research missions for FY 2006–2008.

B-Factory has a solid track record for meeting (and in most cases exceeding) DOE established milestones for integrated luminosity. Although, integrated luminosity trends for FY 2006 are slightly below the projected goal, recent performance, if continued, should be sufficient to meet the DOE milestone for FY 2006. In addition, SLAC has a program of upgrades intended to achieve 1 inverse atto-barn by the end of FY 2008.

The Committee was encouraged by the strengthened emphasis on lattice modeling and simulation, which is improving peak luminosity. However, a significant fraction of the luminosity upgrade is based on increasing the current in both machines by 40 percent, which will increase the peak current by a factor of three and introduce significantly more heating into the accelerator components. This increase will be challenging and may not be fully realized.

BaBar has had a very successful year. An elevated importance of safety is integrated into the BaBar culture. A strong international community helps BaBar operate effectively and demonstrate physics in a timely fashion. Data has been acquired with an outstanding 97 percent efficiency for Run 5.

The laboratory reorganization implemented since the June 2004 DOE review seems well aligned with the present and future directions of SLAC. There appear to be adequate systems in place to set and communicate priorities, track progress, and resolve problems as they arise. SLAC management seems to understand the major risks with potential that can affect B-Factory operations and is working to manage and mitigate them. The Committee was impressed by the critical level of safety importance addressed while continuously delivering impressive performance from the accelerators and the detector.

Overall, resources appear to be adequate in the near term, however, staffing remains lean and this will require active management and the organization of priorities to ensure B-Factory goals are achieved.

CONTENTS

1. INTRODUCTION

The Office of High Energy Physics (OHEP) supports the operation of the B-Factory Complex (PEP-II e+e- Collider and the BaBar detector) at the Stanford Linear Accelerator Center (SLAC). The B-Factory is scheduled to operate until August 1, 2006, at which time a major upgrade lasting four months will occur. The B-Factory will then continue operations at a higher luminosity through FY 2008.

OHEP requested that the Office of Project Assessment perform an independent review of the B-Factory Complex at SLAC to evaluate the B-Factory's past year performance, the resource requirements, and the management practices needed to effectively support its research mission for FY 2006-2008. The review was conducted on April 26-27, 2006, at SLAC, and was chaired by Daniel R. Lehman, Director of the Office of Project Assessment. To address the charge, the Committee was divided into three subcommittees that examined PEP-II accelerator operations, BaBar detector operations, and laboratory management performance separately. The Committee members were drawn from Office of Science laboratories and the Office of Project Assessment. The Department of Energy (DOE) Stanford Site Office made a presentation at the review's opening DOE Executive Session and observed the full proceedings.

The review was based on formal presentations provided by the SLAC staff, detailed discussions with SLAC employees, and the Committee members' extensive experience. A half-day was devoted to presentations delivered by SLAC. These presentations provided an overview and response to the charge letter. For the remainder of the day, each subcommittee heard specialized presentations from relevant SLAC employees in three subcommittee breakout sessions. The remaining time was spent on subcommittee working sessions and Committee deliberations, and report writing. The Committee discussed the results of the review with SLAC management in a closeout briefing on April 27, 2006.

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2. ACCELERATOR

2.1 Findings

SLAC has dealt with a number of issues since the June 2004 DOE review, including:

- The recovery from the safety stand-down that occurred from October 2004 to April 2005 after the electrical arc-flash incident;
- A series of vacuum related beam trips in the fall of 2005; and
- Reallocation of personnel to Linac Coherent Light Source (LCLS)

Overall SLAC has dealt with these issues very effectively. The Committee noted that during this period of time a reorganization of the laboratory was completed. The Committee also concurred with the laboratory staff that reorganization was a positive step in dealing with both the technical and resource plans.

In addressing the above issues, it is evident that the time during the safety stand down was effectively used, both to improve the safety culture of the accelerator departments, and to plan for the remainder of the FY 2005 operation. Shortly after restart in April 2005 a new peak luminosity record was established, and the overall FY 2005 baseline integrated luminosity milestone was met.

The vacuum problems (which first surfaced in the fall of 2005) have limited peak luminosity. The problems were observed at high LER (low-energy ring) current; thus, the current in the LER has been reduced until the problems were resolved. The Committee was impressed with the diagnostic work conducted to identify the problem and engineer a solution. The components that caused these problems have been replaced, and the LER is again operating near the record current achieved before these problems surfaced. No further vacuum spikes have occurred.

Construction of the LCLS has pressured the manpower resources for the B-Factory. However, the message given to the Committee was that priorities are being well managed. The Committee did not observe any significant tension that often occurs when a construction project is underway at an operational laboratory. The new organization structure is credited to contributing to this healthy coexistence. The Committed noted that there is an impact, but it does not appear to be limiting the B-Factory in its execution of plans, as a result of daily discussions and flexibility in redirecting resources.

The funding resources are adequate if SLAC estimates of equipment failures are correct.

Risks exist in several areas:

Aging Equipment. Risk items have been identified by SLAC and mitigated. There is a proactive preventive maintenance program making use of the yearly shut-downs and a more reactive maintenance program using the repair periods when the machine is running. The tracking of failures and reliability issues is excellent.

Klystrons. SLAC is making adequate preparation to have sufficient spare Klystrons for running PEP-II until September 2008 and also developed a fallback strategy in case of increased failure rate of the Klystrons.

Power Costs. The electric power costs have doubled recently when a long-term contract with the utility expired. Currently, there are new contracts in place that should cover the period until September 2008 without significant risk of further major electric cost increases.

Completion of Luminosity Upgrades in Scheduled Maintenance Periods. There is a possibility that the shutdown might be shifted later in time. In addition, term labor will be hired to supplement the SLAC staff in labor-intensive skill areas.

Possibility of Components of Luminosity Upgrade will not Provide Expected Increase. There is a significant risk that the upgrade plans will not unfold as planned over the next 2.5 years, either due to delays in the installation of the upgrade hardware, unexpected new performance limitations, and/or upgrades not delivering the full anticipated performance improvement. As mentioned below SLAC should develop performance projections that quantify this risk. Fallback options include delivering less than the most optimistic prediction for integrated luminosity, or extending the run of PEP-II.

Over the history of the B-Factory, DOE milestones for integrated luminosity have been met. Integrated luminosity trends for FY 2006 are slightly below the projected goal, but recent performance, if continued, is sufficient to meet the milestone.

Several subtle vacuum problems have limited operation in FY 2006. SLAC has been effective in performing the evaluation and diagnosis of the problem, and well as engineering the necessary solutions.

SLAC has a program of upgrades intended to increase the peak luminosity by a factor of two, and an overall goal of integrating 1 inverse atto-barn (1 a^{-1}) by the end of FY 2008. Approximately 50 percent if this increase comes from a 40 percent increase in average current in each machine. The Committee also noted that the plan anticipates a shortening of the bunches, which coupled with the increase in average current, will raise the peak current by a factor of three.

A complete suite of hardware replacements and upgrades have been planned and are for the most part in fabrication with the goal of either increasing the luminosity or reliability and availability of the machine. Many particular replacements target vulnerabilities of the HER (high-energy ring) and LER components and vacuum system that either presently are, or soon will be, operating beyond their design capability for heat load. The replacement of the buttons of the beam position monitor (BPM) electrodes and the new bellows assemblies for Q2/Q3 are good examples of devices working beyond their designed heat loads. In other cases it is not specifically understood what elements are likely to suffer or be prone to failure from the increased heat load. In such cases, it is hoped that the use of higher order mode (HOM) dampers designed to reduce heat loads on adjacent components will reduce the risk of power absorption induced failures. The current increase in the HER requires two new radio frequency (rf) systems.

Efforts to understand and improve the lattice have increased substantially since the June 2004 DOE review. There is a group that focuses on these issues. Diagnostics have been improved to provide input for this group.

2.2 Comments

A number of different integrated luminosity plots and plans, many of which begin at different points in time, were presented to the Committee. A lifetime goal for integrated luminosity was not apparent, except the comment that by the end of FY 2008 the B-Factory would like to witness 1 a^{-1}. The Committee suggested that SLAC work with DOE to establish a lifetime luminosity profile showing base, desire, and actual integrated luminosities.

The Committee was concerned that the planned increase in average current, along with the planned reduction in bunch length, will not be realized. Many problems will be encountered including:

- Greatly increased HOM heating
- Potential for encountering unanticipated beam instability thresholds
- Beam feedback systems cannot lack the ability to handle power

- Detector background
- Increase likelihood of downtime

SLAC is certainly aware of these issues, and therefore is encouraged to commit to the strategy of moving conservatively with respect to increasing average current, while pursuing luminosity upgrades that can be realized by improvements to the machine optics.

Introducing HOM dampers to prevent rf power from overheating poorly cooled devices, could effectively increase the broadband impedance of the PEP rings and lower the threshold for fast instabilities. The impact of every HOM damper insert on the impedance budget should be carefully evaluated before installation.

The vacuum and component replacement designs evidence strong rf, vacuum, and engineering expertise and are likely to perform as anticipated. Both the HER and LER are operating significantly beyond their original design specifications. To achieve the desired increases in luminosity, it is necessary to operate even further beyond initial design. Additionally, operating at or beyond the original design parameters of ring components can and has shorted the lifetime of some components. Consequently, a situation may result where no further gains in reliability and availability over those achieved to date will be realized. In fact, as current is pushed even higher it may prove difficult to maintain the present levels of availability and reliability. The basis of the comment may be evidenced by the string of vacuum issues that have plagued parts of Run 5b and that the best records for integrated luminosity (best seven days, week, 30 days, and month) are all approximately 20 months old (July 2004).

The schedule of several critical component upgrades is very tight with respect to the scheduled shutdown starting in August 2006. Particularly, the BPM button replacements and the HOM Q2/Q4 replacement bellows are not expected for completion during the four-month shutdown.

The Committee was encouraged by the increased emphasis on machine modeling and lattice improvements. Benefits have already been realized by this work, and as noted in the comment above, many of the potential luminosity upgrades.

SLAC should develop two scenarios for project performance over the next 2.5 years: 1) calculate the present performance until September 2008 with no upgrades; and 2) install and successfully commission all planned upgrades according to the upgrade plan. Both scenarios have zero probability of actually occurring, but are well defined. The most likely total integrated

luminosity will be in between these two extremes.

2.3 Recommendation

1. Develop two scenarios predicting future integrated luminosity for the next 2.5 years (essentially a minimum and maximum) to aid in setting the expectations of actual performance. Present the scenarios to OHEP by June 30, 2006.

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3. DETECTOR

3.1 Findings and Comments

Babar has had a very successful year. An elevated importance of safety is integrated into the BaBar culture. BaBar worked very effectively with the PEP-II staff. Data has been acquired with an outstanding 97 percent efficiency for Run 5. A strong international community helps BaBar operate effectively and demonstrate physics out in a timely fashion. Since the June 2004 DOE review, 110 papers were published. Numerous steps have been taken to deal with increasing luminosity and aging equipment.

A root-based new data handling model has been successfully implemented. Remote European centers have been successfully incorporated as essential elements into BaBar data processing. All data has reprocessed with Release 18, which BaBar believes will be valid to the end of the experiment.

A strong international community allows for a significant pool to draw upon for expertise. BaBar has put together run plans with needed personnel resources through 2008. While most of the jobs needed to operate BaBar can be filled with beginning graduate students or post docs, there are a number of key positions open for the next year that require significant skills and experience. BaBar will continue to need visitor funds at SLAC for key technical jobs. BaBar management believes the technical and engineering personnel for summer 2006 shutdown is adequate. Pending a decision in regard to the hoisting and rigging documentation, more engineering personnel may be required.

Planning for the four-month 2006 shutdown is not yet mature. SLAC needs to complete (immediately) its hoisting and rigging plan. If substantial documentation of “ordinary lifts” were required, BaBar would have to find the mechanical resources to complete the documentation. Without these extra resources, the shutdown may need four-six additional weeks.

The BaBar shutdown schedule has minimum no-cycle time contingency for accomplishing all of the planned work (a three-shift operation is already planned). Some of the work can be deferred until summer 2007, as well as elimination of the installation of some of the Limited Streamer Tubes (LSTs) with a minimal loss in physics. A plan has not been fully developed for the shutdown in terms of where the decision points are and be the strategy of the experiment if shutdown work slows. It is unclear what is driving the four-month shutdown—LCLS, PEP-II, and

BaBar all seem to be pushing the envelope of what can be accomplished in four months.

If key skilled people are not identified, BaBar operations will be jeopardized.

If the LHC (Large Hadron Collider) starts extracting data in 2007 or 2008, BABAR is depending on a significant impact on the availability of "off-shore" computing in 2008+. BaBar is considering using GRID computing, which may be helpful in the future.

SLAC had two serious safety incidents over the past three years. To minimize risk to its physics goals, BaBar needs to continue to emphasize safety. The FY 2009 plans for BaBar need to be clear otherwise, there is risk of losing key personnel in the years preceding FY 2009.

BaBar is anticipating the effects of the machine backgrounds due to increasing luminosity very comprehensively and has plans to mitigate these backgrounds. As there is a risk that 1 ab^{-1} will not be reached, a more conservative fallback goal in terms of physics should be defined for the DOE milestone for success.

3.2 Recommendations

1. Clarify which entity (BaBar, PEP II, or LCLS) defines the timing and duration of the 2006 shutdown.

2. Define the milestones and contingency decisions for the BaBar shutdown.

3. Finalize the requirements for hoisting and rigging by mid-May 2006.

4. MANAGEMENT

4.1 Findings and Comments

The new laboratory organization appears well aligned with the present and future direction of SLAC. The reorganization has preserved quality performance and is conducive to managing the Laboratory's top priority programs. The cohesiveness of the Directorate, which includes all of the SLAC Program Managers, is an advantage for the laboratory, in allowing it to manage the overall program for the benefit of the laboratory as a whole, and in balancing conflicting priorities and programs with different constituencies.

The Committee was impressed by how seriously and rigorously safety is being addressed, while at the same time, the laboratory is delivering impressive performance from the accelerators and the detector.

Resources

In general, SLAC appears to have the necessary resources to accomplish B-Factory operations through FY 2008. However, the overall SLAC staffing situation has remained lean, similar to that observed at the June 2004 DOE review. This will require active management and setting clear priorities to ensure that B-Factory goals are achieved. The success of the past two years has demonstrated that this can be accomplished.

The 2005 reorganization represents an improvement in matching SLAC's structure and resources to current and future programmatic activities, in particular, now a SLAC Directorate (APP) is responsible for B-Factory operations, which contains the requisite personnel and budget.

Credible SLAC-wide staffing plans are under development to support B-Factory operations through FY 2008. A key risk to completing the final year (FY 2008) of operations lies in whether there will be a smooth transition for B-Factory staff to other programs (LCLS, International Linear Collider (ILC), Large Synoptic Survey Telescope (LSST), etc.) in FY 2009. The planned growth of these programs is essential to providing a clear transition path for B-Factory operations personnel, and hence, important for retaining staff through the final months of FY 2008. There has been a high-level analysis of longer term staffing needs beyond FY 2008, but further planning is needed at a more detailed level.

The possible attrition of SLAC's aging workforce has created some vulnerability in key skills. Management is aware of this issue and is working to address it by transferring knowledge to other staff through cross-training (where possible) and external recruiting efforts.

The most significant near-term challenge in resource planning has to do with the upcoming FY 2006 shutdown, when B-Factory upgrades will be competing for staff and infrastructure with LCLS installation activities. In addition, the upgrade installation schedule appears to be quite ambitious. Considerable planning efforts are underway. Inter-Directorate communication and coordination appear to be strong. There is a healthy attitude and shared understanding among senior SLAC management that B-Factory and LCLS are the laboratory's top priorities—one near-term and the other long-term, and that success in both is imperative.

SLAC management has taken steps to mitigate the risks involved with the upcoming upgrade installation period. Steve Williams, who is a senior manager with over 40-years SLAC experience, has been assigned as a liaison between B-Factory and LCLS to help resolve resource prioritization issues between them. He has been highly effective in his role as a B-Factory/LCLS troubleshooter. Further, there are plans to augment SLAC staff with temporary personnel in certain areas. This approach has been successfully employed in the past.

Risks

Three major risks confront SLAC management in its effort to ensure the success of the last 2.5 years of operations of the B-Factory:

- The transition that will occur when PEP-II operations cease and the consequent challenge of maintaining the staff required to operate the facility as PEP-II ends.
- The potential conflict for resources between LCLS and the B-Factory (which are both programs in which SLAC must deliver positive outcomes).
- The deliverance of management expectations of the integrated luminosity by the end of the PEP-II run.

SLAC management appears to understand these risks and is working to manage and mitigate them.

As discussed above, SLAC is in the process of developing a site-wide staffing plan through FY 2008 (the last year of B-Factory operations) into FY 2009 and beyond in preparation for a review by the Office of Basic Energy Sciences (BES) to support the transition from OHEP to BES as the primary financial supporter (landlord) of the laboratory. At a high-level, it appears that the

staff currently supporting PEP-II and BaBar can make a reasonably smooth transition to operations of LCLS, ILC R&D, and other particle physics and astrophysics experiments. However, the study of skills diversity within the project's overall staffing structure has not been completed. The Committee agrees it is important to understand how the required mixture of skills will change, and to understand the implications for the SLAC staff and the scientific program of the potential changes. Successful planning will affect not only the success of the future programs, but also the continuity of the highly skilled staff required to support the ambitious B-Factory program through the end of the run.

SLAC has two first-priority programs, the B-Factory and LCLS, and the success of both is crucial for SLAC. Potential conflicts for resources, particularly people, between these two represents a risk to both, and setting priorities is made difficult by the fact that they are sponsored by different DOE programs and have different scientific constituencies. Fortunately, their time scales are different; the LCLS staffing needs are long-term and can usually be averaged over shorter-term peaks in the needs of B-Factory. The tight organization of the SLAC Directorate, which meets frequently and in which each of the Associate Directors is expected to be responsible for the overall good of the laboratory, not just their own portfolios, will be important in navigating potential conflicts between these two number one priority programs. In addition, the appointment of Steve Williams, a highly respected, experienced manager with broad knowledge of the laboratory, as liaison to the LCLS, has already proven effective in dealing with issues that affect both programs.

SLAC has set an ambitious goal of achieving integrated luminosity of 1 ab^{-1} by the end of FY 2008. The setting of ambitious goals is important for achieving the maximum possible performance of the B-Factory program. However, while the goal appears achievable, it is by no means guaranteed, and it is important for SLAC to manage the expectations of the scientific community and the funding agency to avoid misunderstandings similar to those encountered by other programs.

In addition to these broader risks, SLAC is, of course, subject to a wide variety of the typical risks faced by all similar programs. In most cases, the laboratory has identified these risks (shown in Table 4-1) and is planning to take action to mitigate those risks that could jeopardize mission accomplishment and/or the future of the laboratory.

Table 4-1. Risks

Major Programmatic Risks and Uncertainty	Laboratory Plans and Actions
Safety remains a major programmatic risk.	Embrace the safety culture fully.
The culture of lean and efficient operations often leads to overworked personnel.	Provide top-level coordination of programs to ensure that key personnel are not overloaded.
Funding constraints will continue to force unwelcome trade-offs.	Ensure that priorities are clearly set, understood, and fully supported.
The ability to fund and implement critical infrastructure improvements.	Identify and track infrastructure needs on a lab-wide basis.

Management

There appear to be adequate systems in place to set and promulgate priorities, track progress, and resolve problems as they arise. The laboratory's overall priorities regarding the B-Factory have been clearly stated—delivering high-integrated luminosity with high efficiency of data input/retrieval is the top OHEP priority, and together with LCLS is the top priority of the laboratory. In addition, there appears to be a quality delegation of priorities to the divisions and departments within Particle and Particle Astrophysics (PPA) and the other Directorates that support the B-Factory. Subsidiary priorities are set by these organizations, for example, the Mechanical Fabrication Department within Operations Directorate.

SLAC has a variety of mechanisms for planning, tracking, and managing the different programs at all levels; e.g., the series of daily and weekly planning meetings, dedicated task forces, the ARTEMIS (Accelerator Remedy Trouble Entry and Maintenance Information System) maintenance database, etc. The system of daily and weekly meetings of the Directorate and of PPA leaders is an effective mechanism for anticipating and addressing problems. The high operational efficiency of PEP-II and BaBar, and the efficient way that recent difficult vacuum issues were resolved, attests to the effectiveness of these mechanisms.

4.2 Recommendation

1. Provide DOE with a SLAC-wide staffing plan through FY 2009 based on best available information in order to assist the DOE OHEP and BES programs in optimizing the transition from B-Factory operations to follow-on programs such as LCLS operations and future OHEP funded activities by August 1, 2006.

APPENDIX A

CHARGE MEMORANDUM

DOE F 1325.8
(08-93)

United States Government Department of Energy

memorandum

DATE: March 8, 2006

REPLY TO ATTN OF: SC-25

SUBJECT: Request to Conduct a Review of the B-Factory Operations

TO: Mr. Daniel Lehman, Director, Office of Project Assessment, SC-1.3

The High Energy Physics program supports the B-factory program at Stanford Linear Accelerator Center (SLAC), carrying out the world-class research program. The B-factory program includes the operation and performance improvement of the B-factory accelerator complex and the operation of the BaBar detector.

This memorandum is to request that you organize and conduct a review of the B-factory Operations on April 26-27, 2006 at SLAC. The purpose of this review is to evaluate the past year performance, and the resource requirements and management practices needed to effectively support its research missions for FY2006 – FY2008.

The scope of the review will include an assessment of the performances of the B-factory accelerator complex and BaBar detector over last year and the evaluation of the remaining improvement plans by addressing the following specific items:

1. Has the laboratory successfully executed its plans for the operations of the accelerator and detector and for their improvements during the past year?

2. Have adequate resources (i.e. manpower, funding, etc.) been identified and allocated to carry out the plans?

3. Are there any program risks and has the laboratory developed an adequate risk analysis with identified fallback plans?

4. Is the laboratory management effectively setting priorities, tracking progress, and resolving problems for a successful execution of the proposed plans?

John Kogut is the program manager for SLAC in this office and will serve as the OHEP contact person for the review.

We appreciate your assistance in this matter. As you know, these reviews play an important role in our program. I look forward to receiving your Committee's formal report within 60 days of the review.

/signed/

Robin Staffin
Associate Director
Office of High Energy Physics

cc: R. Orbach, SC-1
J. Decker, SC-2
A. Byon-Wagner, SC-25
N. Sanchez, SSO
J. Dorfan, SLAC

APPENDIX B

REVIEW PARTICIPANTS

Department of Energy Operations Review of the
B-Factory at the Stanford Linear Accelerator Center
April 26-27, 2006

Daniel Lehman, DOE, Chairperson

SC1 Accelerator	SC2 Detector	SC3 Management
* Rod Gerig, ANL	* Howard Gordon, BNL	* Jim Strait, FNAL
Thomas Roser, BNL	Rob Roser, FNAL	Jeff Hoy, DOE/SC
Kem Robinson, LBNL	Roy Whitney, TJNAF	Steve Meador, DOE/SC

Observers

Aesook Byon-Wagner, DOE/SC
John Kogut, DOE/SC
Pedro Montano, DOE/SC

LEGEND

SC Subcommittee
* Subcommittee Chairperson
[ ] Part-time Subcom. Member

Count: 10 (excluding observers)

APPENDIX C

REVIEW AGENDA

Department of Energy Operations Review of the
B-Factory at the Stanford Linear Accelerator Center

AGENDA

Wednesday. April 26, 2006—Research Office Building (Bldg. 048), Quad. Conf. Room

8:00 am	DOE Executive Session	D. Lehman
9:00 am	Welcome and Laboratory Overview	J. Dorfan
9:30 am	PPA HEP Overview and PEP-II Project Tracking	P. Drell
10:00 am	Break	
10:30 am	PEP Overview and Future Plans	J. Seeman
11:15 am	BaBar Overview and Future Plans	D. MacFarlane
12:00 pm	Lunch	
	PEP-II Accelerator Breakout	
1:00 pm	PEP-II Status Update	U. Wienands
1:45 pm	PEP-II Future Upgrades, Downtime Planning and Resources	J. Seeman
2:15 pm	PEP-II Vacuum Status	S. Ecklund
2:45 pm	PEP-II Vacuum System Upgrades	N. Kurita
3:15 pm	PEP-II Program Risks, Risk Analysis, and Fallback Plans	J. Seeman
	BaBar Breakout	
1:00 pm	BaBar Hardware Upgrades/Downtime Planning	W. Wisniewski
1:45 pm	BaBar Backgrounds	M. Weaver
2:15 pm	Manpower and Resources for BaBar	D. MacFarlane
2:45 pm	BaBar Program Risks, Risk Analysis, and Fallback Plans	D. MacFarlane
	Management Breakout	
1:00 pm	PEP-II Operational Safety	R. Erickson
1:45 pm	Operations Directorate/Resource Priorities/Tracking/Issues	J. Cornuelle
5:00 pm	DOE Executive Session	D. Lehman
6:00 pm	Adjourn	

Thursday, April 27, 2006

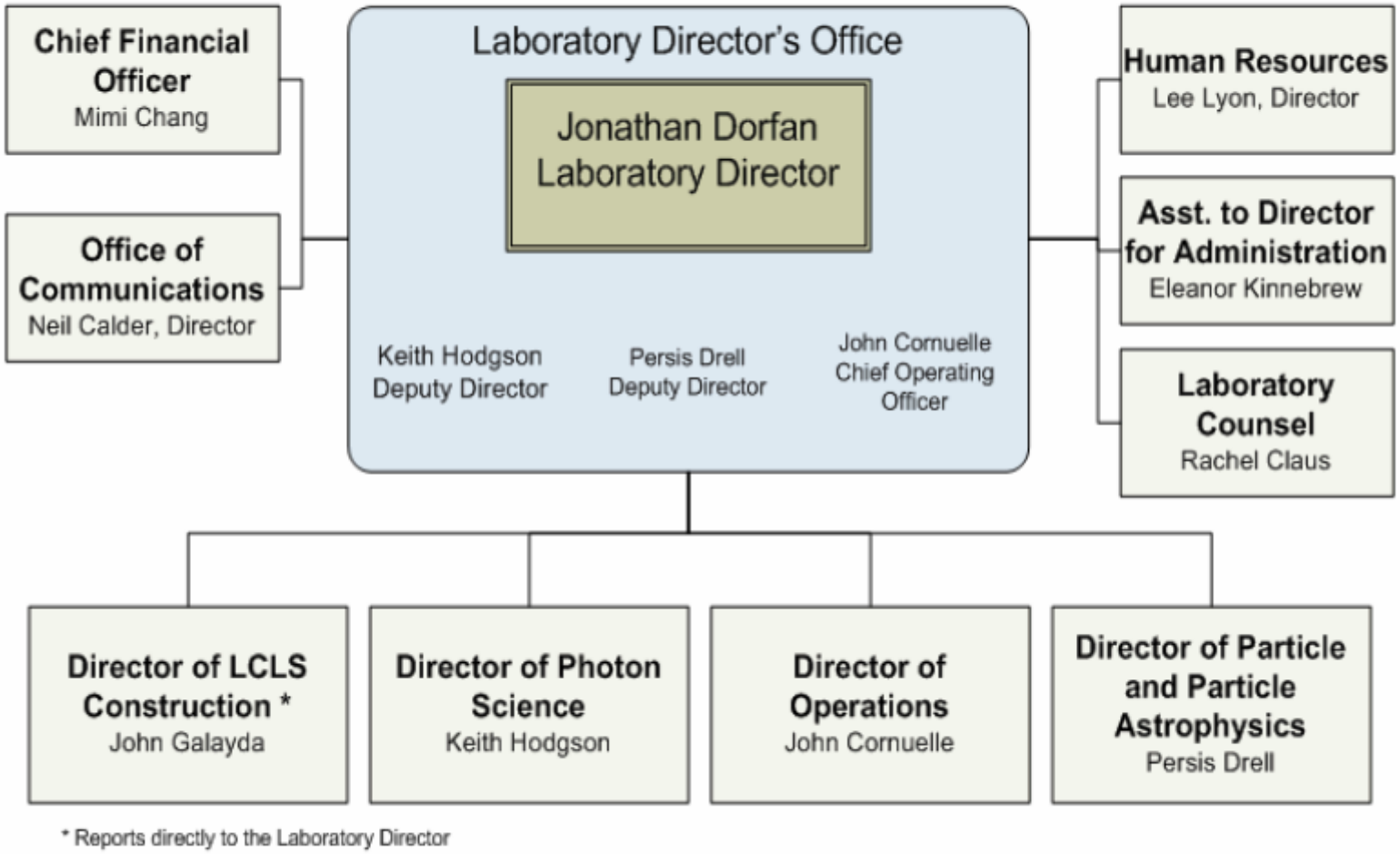
8:00 am	DOE Executive Session/Writing Session/PEP-II Question Response	D. Lehman
9:30 am	DOE Full Committee Executive Session Dry Run	
1:30 pm	DOE Closeout with Laboratory Management	D. Lehman
2:30 pm	Adjourn	

APPENDIX D

MANAGEMENT TABLE

Stanford Linear Accelerator Center

Directorate Level Organization



* Reports directly to the Laboratory Director