ESH&Q

Bob Lee, NSLS-II ESH&Q Manager

Triennial Operations Peer Review

Breakout Session, June 20th 2017

Outline

- ESH&Q Vision, Strategy
- FY18 Goals
- Status
  - Program Elements
  - Safety Statistics
- Staffing and Budget for FY17 - 18
- Staffing and Budget 2015 – 2018
  - Benchmarking
- Budget Risks
- Summary

ESH&Q Vision and Strategy

Vision: To enable the safe performance of cutting-edge synchrotron science through implementation of ESH&Q programs that ensure the protection of workers, facilities and the environment.

Strategy:

- Maintain a staff of seasoned ESH&Q professionals with strong accelerator backgrounds
- Staff is integrated into all NSLS-II accelerator and experimental operations
- Strong links to the central ESH&Q through the deployed services model
- Actively engaged in work-planning including managing the Experimental Safety Review process for beamlines and laboratories and User Science through the Safety Approval Form process
- Manage all events and injuries from the time of event notification through investigation completion.

FY18 Goals:

- Support the design, construction and installation of 5 new beamlines and 10 support laboratories
- Facilitate the Readiness Reviews for 5 new beamlines and 10 new laboratories. Manage reviews associated with modifications to existing beamlines and assist in their transition to user science
- Support changes to the accelerator needed to achieve the NSLS-II goal of 500 mA by 2020
- Support the User science program through the effective use of the Safety Approval process
- Protect the NSLS-II Authorization Basis through the implementation of a robust Unreviewed Safety Issue process
- Continue to support operating facilities (e.g. PPS certifications, Experimental Safety Reviews)
- Maintain staff capabilities to support pending projects (HEX, MRE)

Status: ESH&Q Program Elements

The following is a list of main program elements that support NSLS-II operations and build-out:

ESH

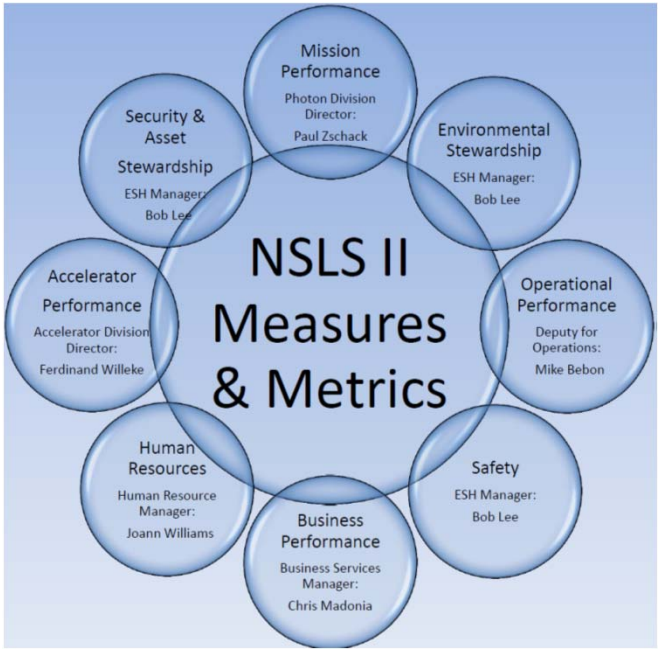
- Manage the NSLS-II Authorization Basis Documents and USI process
- Manage the NSLS-II Conduct of Operations
- Support the engineering design process to ensure compliance with regulatory requirements and ensure facilities are safe, including radiological safety and meet Quality Assurance expectations
- Prepare and implement PPS certification and Search and Secure procedures
- Manage the Oxygen Deficiency Hazard and other hazard monitoring systems
- Manage and monitor the NSLS-II training program to ensure staff are qualified to perform work
- Manage the implementation of the BNL Environmental and Occupational Safety and Health Management Systems at NSLS-II (ISO14001, OHSAS18000)
- Manage the Experimental Safety Review and Readiness Review processes including User, Beamline, Instrument, Accelerator and Operational
- Manage User Training to ensure they are qualified to use our facilities
- Ensure NSLS-II ESH&Q programs meet Institutional Requirements

A full matrix of staff responsibilities and assignments is available.

Status: ESH&Q Program Elements (cont.)

Quality Assurance

- Manage the organizational self-assessment program
  - Includes planning and execution
- Manage NSLS-II Performance metrics
- Manage the NSLS-II Documents and Records center
- Maintain the NSLS-II Lessons Learned program
  - Support DOE Lessons Learned
- Manage Travelers for equipment and systems
- Ensure configuration management of systems and structures
- Corrective Action Management including tracking to ensure closure
- Coordinate incoming inspections
- Assist with document and design reviews and support readiness reviews
- QA support to procurement
- Manage Discrepancy Reporting system



Management of Authorization Basis and USI Process

- Facility continues to evolve from construction to a fully "operations" facility
- Numerous facility changes necessitated changes to the Safety Assessment and Accelerator Safety Basis documents
- Changes are implemented through the NSLS-II Unreviewed Safety Issue Process
- All changes are reviewed with regard to their potential impact on the ABDs and the NSLS-II Conduct of Operations Matrix including changes to: engineering design, procedures, new installations, Safety System Work permits, etc.
- > 100 screens performed monthly
  - **USI Screening:** Involves the completion of a simple questionnaire to determine whether a proposed activity has the potential to create a USI, or whether an existing condition potentially constitutes a USI.
- ~< 10 USI Evaluations done annually, most are negative
  - **USI Evaluation:** Detailed, documented analyses to determine whether a proposed activity will create a USI, or whether an existing condition constitutes a USI.

Experimental Safety Review/Safety Approval Forms

- BNL Electronic Experimental Safety Review used at NSLS-II (https://ias.bnl.gov/esr/)
- An ESR is completed for each beamline and laboratory and updated as new equipment is installed (at a minimum the ESR is reviewed annually)
- Describes hazards associated with spaces and equipment
- A Safety Approval Form (SAF)is submitted for each experiment and is reviewed and approved by ESH
  - Recent enhancements to the SAF include SAF types (e.g., technical commissioning) and an enforced hierarchy of approvals.

NSLS II Measures & Metrics

Mission Performance
Photon Division Director:
Paul Zschack

Environmental Stewardship
ESH Manager:
Bob Lee

Operational Performance
Deputy for Operations:
Mike Bebon

Safety
ESH Manager:
Bob Lee

Business Performance
Business Services Manager:
Chris Madonia

Human Resources
Human Resource Manager:
Joann Williams

Accelerator Performance
Accelerator Division Director:
Ferdinand Willeke

Security & Asset Stewardship
ESH Manager:
Bob Lee

Information Resources Improvement Project

- Improve Effectiveness of NSLS-II Information Resources Program
  - Documents: Establishes the requirements for work at all levels of the NSLS-II organization including Procedures, Policies, Process Descriptions, Plans, Work Instructions, Work Planning Documents
  - Record: Information of any kind and in any form created, received, and maintained by individuals as evidence of functions, policies, decisions, procedures, operations, or other activities e.g., PPS Test Reports, Photographs, Calibration Certificates, Inspection Sheets, etc.
- NSLS-II Focus has Shifted from Construction/Commissioning to Operations, User Program, Beamline Development
- Vision for Project
  - Improved Document Development, Organization, Use and Control; Document and Record Storage
  - Establish a NSLS-II Program Suitable for NSLS-II Operations
  - Develop a User Friendly Information Management System
    - Documents
    - Records
  - Improve Communication of Requirements
  - Staff Ownership of Requirements

Safety Statistics

	Hours Worked	First Aid Cases	Recordable Cases	TRC Rate	DART Cases	DART Rate
FY15	783,888	5	0	0	0	0
FY16	761,128	3	0	0	0	0
FY17 (YTD)	452,357	3	4	1.77	2	0.88
DOE Goals				0.65		0.25

- Outstanding Safety Statistics through FY16, > 2.0 M hours worked without a lost time incident.
- FY17 uptick in Recordable/DART cases
  - FY17 Recordable cases include a worker getting wind-blown debris in his eye, a shoulder strain and two back injuries.
  - Both back injuries were DART cases, one person is still out.
  - All injuries are investigated and communicated with staff
  - ESH engaging with groups to discuss injuries to identify possible causes
  - Staff distractions due to work load and budget uncertainties are likely contributing causes
- Actions taken: increased messaging: All-hands, newsletter, group meetings
  - Messages stress safety is forefront to budget and schedule, report all events, it's OK to stop and evaluate needs

Evolution of ESH&Q Since 2015

Fully transition the NSLS-II organization from a construction project to an efficient and effective facility operations organization. The tasks to achieve this goal include, but are not limited to, rebalancing the staff skill mix and transitioning the staff size to an appropriate level, transferring non-mission specific business operations to laboratory central services, and re-assessing the Environmental Safety & Health (ES&H)/Quality Assurance (QA) program to streamline its processes and retain a core ES&H/QA staff within the NSLS-II organization that reports directly to facility

- Organizational Changes
  - Field Deployed Service Model implemented for ESH and QA staff
    - ESH&Q Manager reports directly to NSLS-II Director
    - Staff matrixed through a Service Level Agreement
    - Performance Management "delegated" to Manager
    - Staff reductions: 4.5 FTEs ($700 K)

- Opportunities presented by the CMFD Model
  - Increase staff knowledge and transference across organizational boundaries
  - Ability to share resources to fill gaps (e.g. ESH staff assistance with F&O)
  - Cost savings by redeploying staff

Benchmarking

- Benchmarking Exercise – September 2015
  - Staff from BNL, SLAC, APS and ALS participated
  - APS and NSLS-II most similar and resources mapped well
  - Several recommendations regarding services provided through Radiological Controls Division

Benchmarking Exercise Recommendations

- Several comments concerning Radiological Control Division charges:
  - TLD charges are high and should consider going to a quarterly or longer exchange period and/or contract out
    - RCD performed a make or buy evaluation presented to senior management with the decision to maintain the program as-is
    - TLD exchange frequency predicated by software. Resource and ability to rewrite the software not available/feasible due to outdated programming language, security issues, links into HR and other QA issues. Total charges are not expected to change since the base program needs to be supported (i.e., TLD rate goes up).
    - Energy Employee Occupational Injury Compensation Program Act significant driver to exposure monitoring
      - BNL responsible for $220 M in claims
  - Better management of Radiological Control Technician time should be exercised.
    - RCT allocations have been reduced by ~ 1.4 FTEs

External Dosimetry – Make or Buy

- Performed in 2004 and 2013
  - Minimal benefit since the only savings is cost for processing TLDs, all other program requirements remain (e.g., technical basis, data management, dose reporting).
  - Cost savings estimated at $30 K
  - Negative impacts include dose report quality and the ability for rapid turnaround for "emergency" situations. Lose the ability to perform spectrum studies and application of new technologies.
  - Maintenance of DOELAP accreditation remains a Laboratory responsibility and regulatory requirement
  - Past vendor supplied services frequently failed DOELAP performance tests and there were significant concerns with management of data
  - Inability to reproduce Landauer data resulted in extending BNL into the Special Exposure Cohort group under EEOICPA.
- RCD determined the cost savings did not warrant the "Buy" option
- Quarterly badge exchange considered but not funded. Little cost savings projected that could be extended to the Line.

Make or Buy Business Assessment of Personnel Monitoring Group's External Dosimetry Services

Prepared by: B. Hooda and H. Kahnhauser

Radiological Control Division (RCD)
Environmental Safety& Health Directorate

July 31, 2013

BNL is highly supportive of the EEOICPA Program

BROOKHAVEN NATIONAL LABORATORY - NEW YORK

Data as of 04/30/2017

Statistical data updated weekly on Mondays

Combined Part B and E Summary

		CLAIMS	CASES
Applications Filed		**3,695**	**2,705***
Total Compensation Paid	**Payments**	**1,891**	**1,485**
	Total Dollars		**$200,258,814**
Total Medical Bills Paid	**Total Dollars**		**$19,231,143**
Total Compensation + Medical Bills Paid			**$219,489,957**

* The above numbers of applications filed represent 1,460 unique individual workers.

The BNL Point of Contact has a personal connection to EEOICPA dating back to 2001

Improvement Opportunities Implemented since 2015

- Approval to move to annual PPS certifications granted in January 2017. Eliminates the need for extended shutdowns and/or additional staffing to continue six-month testing.
- Issuance of TLDs for tours and groups decreased to 1 TLD per 10 visitors.
- Discussions underway to evaluate best practices among facilities to reduce costs associated with beamline construction including process for validating shielding design, reduced PPS requirements for enclosures < 50 R, etc.
- Additional Staff Reductions (temporary): 0.1 FTE Radiation Physicist to CA, 0.25 FTE ESH to Magnet Division
- Savings permitted reinvestment is improvements:
  - Development of an electronic safety system work permit (in process)
  - Improvements in ODH monitoring systems (e.g., latching strobes)

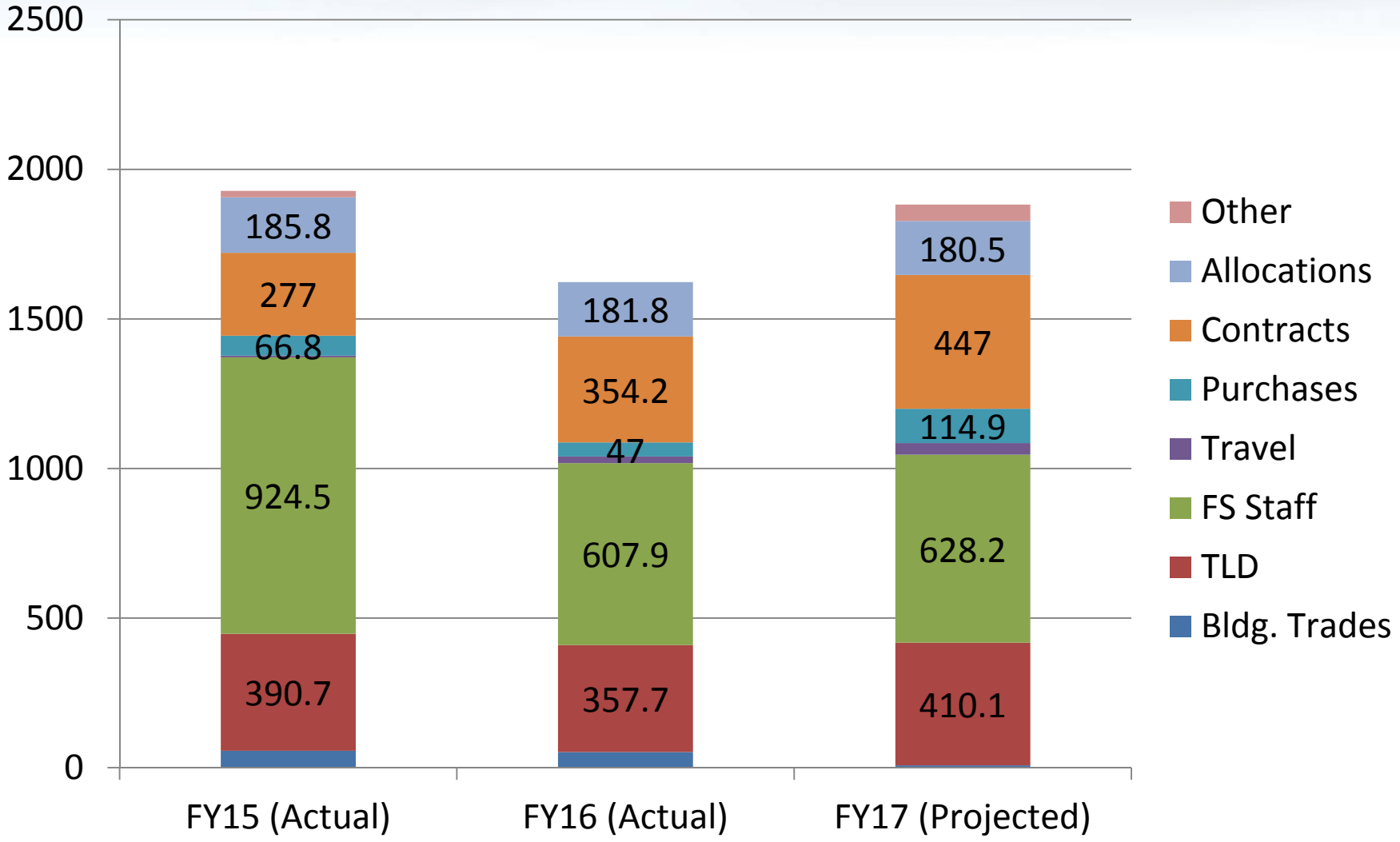
BUDGET SCENARIOS

Overall ESH&Q Staffing 2015 - 2018

Staff Levels	FY15		FY16		FY17	
	FTE	$K	FTE	$K	FTE	$K
Total	18.1	5,900.5	15.1	4,985.8	14.9	5,215.0
Manager	1.0	399	1.0	429.8	0.9	409.8
Professional	11.3	2,335.6	10.7	2,277.4	10.4	2,285.5
Scientific	2.6	793.7	1.0	369.7	1.3	416.0
Technical	0.2	44.8	0.1	14.5	0.1	10.9
Administrative	3.0	399.4	2.3	286.1	2.3	210.7
FS Professional	1.1	291	1.0	257	0.8	226
FS Technician	3.3	634	1.7	351	2.25	402
MS&T		1,003.0		1,000.3		1,254.1

- FY15 – 16 represent Actuals; FY17 is Projected
- FS not included in FTE total and are purchased through M&S. Shown to illustrate reductions
- Staff reduction of ~ 4.5 FTEs ($700K) maintained since FY15 levels (3.2 FTE + 1.4 FS)

MS&T Breakdown ($K)



Assumptions – Planning for FY18

The following assumptions were used in our budget planning:

1) That the BNL environment remains unchanged from current practice including
    1) Indirect rates unchanged
    2) Electric power costs as currently projected
    3) BNL rules on return of space unchanged
    4) IGPP projects remain as currently planned
    5) SLAs remain possible in their current form
    6) Escalation rates remain as projected on labor and materials
2) Estimates are made in terms of FTEs to carry out the work. In the cases where this will require a reduction in the number of heads in the organization, if this cannot be done starting October first, larger reductions will be required
3) Out years beyond FY18 will be flat relative to FY18

President's budget

In addition to the previous assumptions, the following decisions were made by senior management, reflecting the NSLS-II priorities for FY18 and beyond:

1) To curtail beamline development on 4 beamlines
2) To reduce accelerator user operation hours to 4300 hrs
3) To reduce operations on 3 beamlines
4) To procure the 3rd RF cavity, but to slow the schedule on the transmitter and cryo-plant
5) To return space to the Laboratory

Budget Planning FY18 – Presidential Budget

	FY18
New Funds	103.1
Unobligated carryover from previous FY	16.0
Obligated carryover from previous FY	
Total	**119.1**

Accelerator Operations	34.7
Experimental Operations	44.0
BL Development	1.5
Facilities	18.0
ESH	5.2
Unobligated carryforward into next FY (ops)	12.9
commitments from prior year	
Add ins	2.8
NSLS stabilization	
Total	**119.1**

ESH Staffing and Budget FY17 – FY18

	FY17		FY18	
Cost Element	**FTE**	**Total Cost $K**	**FTE**	**Total Cost $K**
Labor	12.47*	$3,338*	13.65*	$3,655*
Radiological Control Techs.	2.25	$403	2.25	$415
Facility Support Professional	0.80	$226	0.80	$233
Allocations: I&C / waste mgmt		$178		$182
M&S		$598		$397
TLD / Area Dosimetry		$410		$419
Safety initiatives		$10		$10
Total		**$5,163****		**$5,311****

* Includes 0.5 FTE funded through Org. Burden.

** Includes $81K Org. Burden in FY 17 and $83K in FY18. W/o org burden, this is the $5.2 M in John's talk.

- Budgets based upon planned work in FY18 and operating experience.
- Increase in FTE for FY18 represents increases in operations supported work (e.g., more beamlines) and less for project support (0.66) and full effect of a recently hired Radiation Physicist (0.52) needed to reduce backlog in shielding analyses
- Reduction in M&S for contract work in FY18 will negatively impact completion of the Information Resource Improvement project

Resource provided through M&S

QA Staffing and Budget FY17 – FY18

	FY17			FY18		
Cost Element	**FTE**	**Total Ops $K**	**Total Org. Burden $K**	**FTE**	**Total Ops $K**	**Total Org. Burden $K**
Labor	2.43	$107	$398	2.0	$0	$410
M&S		$23	$28		$0	$29
Total		**$556**			**$439**	

- QA budget includes operations and org. burden funding. (in addition, projects currently support another 0.57 FTE, not shown here)

- Reduction in 0.43 FTE Operations supported staff in FY18 may result in a full FTE reduction if other support is not identified. This will impact QA group's ability to support projects, increase time needed to implement the QA program elements and result in delays to complete documentation needed to support beamline readiness.

Summary

- Safety performance is commendable.
- ESH&Q staff fully engaged in NSLS-II operations and projects.
- Readiness Reviews have been effective enabling the commissioning and operation of 3 accelerators, 19 beamlines and 20 laboratories.
- Budget reflects concerns raised during the June 2015 review. Staff reduction of ~4.5 FTEs ($700K) in late FY15 maintained.
- Benchmarking in 2015 identified numerous differences across all light source facilities. Areas for reduction evaluated and where possible have been implemented.
- FY18 budget is tight and will not support current QA staffing and continuance of the Information Resource improvement project.