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Environment, Safety, and Health Management Plan for the Construction of NSLS-II Conventional Facilities

February 2009

National Synchrotron Light Source II

Basic Energy Sciences

BROOKHAVEN NATIONAL LABORATORY

BROOKHAVEN SCIENCE ASSOCIATES

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Environment, Safety, and Health Management Plan for the Construction of NSLS-II Conventional Facilities

at

Brookhaven National Laboratory (BNL)

Upton, New York

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Revision No.	Date	Reason
0	September 2008	Preliminary document for planning purposes will be finalized when the General Contractor is chosen to allow specifics of plan to be completed.
1	January 2009	Incorporated LT-specific ESH procedures; added responsibilities for BHSO CSE; updated organization charts to include general contactor.

ACRONYMS AND ABBREVIATIONS

A/E	Architect/Engineer
ALARA	As Low as Reasonably Achievable
BES	Basic Energy Sciences
BHSO	Brookhaven Site Office
BNL	Brookhaven National Laboratory
BORE	Beneficial Occupancy Readiness Evaluation
BSA	Brookhaven Science Associates
CAIRS	Computerized Accident, Incident Reporting System
CDR	Conceptual Design Report
CE	Construction Engineer (NSLS-II)
CEGPA	Community, Education, Government and Public Affairs
CESHP	Construction ESH Plan
CFADCM	Conventional Facilities Assistant Director of Construction Management
CFADDM	Conventional Facilities Assistant Director of Design Management
CFDD	Conventional Facilities Division Director
CFR	Code of Federal Regulations
CF CMT	Conventional Facilities Construction Management Team
CIT	Construction Inspection Team
CSE	Construction Safety Engineer (NSLS-II)
CVO	Contractor Vendor Orientation
DART	Days Away Restricted or Transfer
DDCF	Deputy Director for Conventional Facilities
DEC	Department of Environmental Conservation
DOE	Department of Energy
DPD	Deputy Project Director (NSLS-II)
EC&S	Engineering and Construction Services
ECSM	Engineering and Construction Services Manager
ESH	Environment, Safety and Health
ESHM	Environment, Safety and Health Manager (NSLS-II)
ECN	Engineering Change Notice
EMR	Experience Modification Rates
EPA	Environmental Protection Agency
EP	Plant Engineering
EP O&M	Plant Engineering Operations and Maintenance
ERT	Engineering Review Team
ESH	Environment, Safety and Health
ESSH	Environment, Safety, Security and Health
F&O	Facilities and Operations Division
FPD	BHSO Federal Project Director
FY	Fiscal Year
CESHPP	Construction Environment, Safety and Health Plan
HQ	Headquarters
IO&A	Independent Oversight and Assessment
IPT	Integrated Project Team

ISM; ISMS	Integrated Safety Management; Integrated Safety Management System
LEED	Leadership in Energy and Environmental Design
LT	NSLS-II Project
LWD	Lost Workday
M&O	Management & Operations
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Pollutants
NTP	Notice to Proceed
O&M	Operations and Maintenance
OMB	Office of Management and Budget
ORE	Operational Readiness Evaluation
ORPS	Occurrence Reporting and Processing System
OSH	Occupational Safety and Health
PAC	Project Advisory Committee
PBMC	Performance Based Management Contract
PC	Prime Contractor
PD	Project Director (NSLS-II)
PED	Project Engineering & Design
PEP	Project Execution Plan
PHA	Phase Hazard Analysis
PPM	Procurement & Property Management
PQAP	Project Quality Assurance Program
PSAD	Preliminary Safety Assessment Document
QAP	Quality Assurance Program
QC	Quality Control
QMS	Quality Management System
Rep	Representative
R2A2	Roles, Responsibilities, Accountabilities and Authorities
SAE	Secretarial Acquisition Executive
SBMS	Standards-Based Management System
SC	DOE Office of Science
SHSD	Safety and Health Services Division
SHSD CSE	Safety & Health Services Construction Safety Engineer
SME	Subject Matter Expert
SWN	Stop Work Notice
SOP	Standard Operating Procedure
SPDES	State Pollutant Discharge Elimination System
TEC	Total Estimated Cost
TPC	Total Project Cost
WBS	Work Breakdown Structure

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Appendix A: Article 44 – Safety Incentives

EXECUTIVE SUMMARY

The NSLS-II conventional construction will be conducted in the safest manner possible and will be a model for the construction of future facilities at BNL. This document was developed to ensure that the following critical aspects are well documented and understood by BNL, DOE, and contractor personnel associated with the NSLS-II Project:

- Safety is the highest priority for the NSLS-II conventional construction.
- Safety responsibilities of key personnel are clearly delineated.
- All personnel involved in conventional construction will uphold the ESH vision and policy, as stated in Section 2.
- All applicable BNL Subject Based Management System (SBMS) rules, DOE Orders, and external regulatory rules will be followed.
- There will be frequent and open communication between the Conventional Facilities Construction Management Team, staff, contractors and regulators (through contractor briefings, weekly Project meetings, and periodic oversight meetings).
- Daily construction safety inspections will be performed and documented, and issues will be promptly corrected.
- Any incident, accident, or other abnormal event will be properly communicated via established procedures.
- All personnel (contractor, DOE, and BNL staff) have been trained to have Stop Work authority. The completion of Contractor Vendor Orientation (CVO) satisfies this training for contract personnel.

1 INTRODUCTION

The safety of all personnel is recognized as a primary concern of all staff, guests, contractors and vendors at Brookhaven National Laboratory (BNL) and the National Synchrotron Light Source II (NSLS-II). Unsafe conditions and behavior can cause injuries and fatalities. Lack of attention to safety also delays schedules, leads to damaged equipment, and creates financial loss. Our goal is for all Project participants to plan, manage, and execute their respective operations with the ultimate goal of conducting their operations injury-free on a daily basis.

Brookhaven National Laboratory exemplified its commitment to safety and the environment with registration to the ISO 14001 Environmental Management System and the OHSAS 18001 Safety Management System. Each of these safety systems is routinely audited to ensure that BNL and its contractors meet the commitments identified in the BNL Environmental, Safety, Security and Health (ESSH) policy.

The Integrated Safety Management (ISM) System (ISMS) is a practical approach to the prevention of accidents, with an emphasis on line management responsibility for safely. A central premise is that work planning starts with a focus on the nature of the job to be performed, and an assessment of the hazards involved in each step. Each subcontractor's safety process is expected to continuously improve, through the use of self-assessment and feedback. Figure 1 shows the conventional construction phases of the NSLS-II project, as they relate to ISM.

The NSLS-II Construction Prime Contractor (PC) is responsible for adhering to the requirements of this ESH Management Plan. The NSLS-II Construction PC shall ensure the safety of its personnel by incorporating safety concerns into the planning of each task, providing all personal protective equipment necessary for its employees, establishing a safe and drug-free work environment, and confirming that all equipment in use meets applicable safety standards. The NSLS-II Construction PC is responsible for any actions of its personnel that may endanger or otherwise expose other Project participants to potential hazards.

The NSLS-II Construction PC will be solely responsible for all construction means, methods, techniques, sequences, and procedures. This includes all safety precautions and programs in connection with the work, as well as the coordination of all portions of the work. Each lower-tier subcontractor is likewise required to be responsible for all safety precautions and programs in connection with the work under the PC's contractual agreement and the Contractor's Construction Environmental, Safety and Health Plan (CESHP).

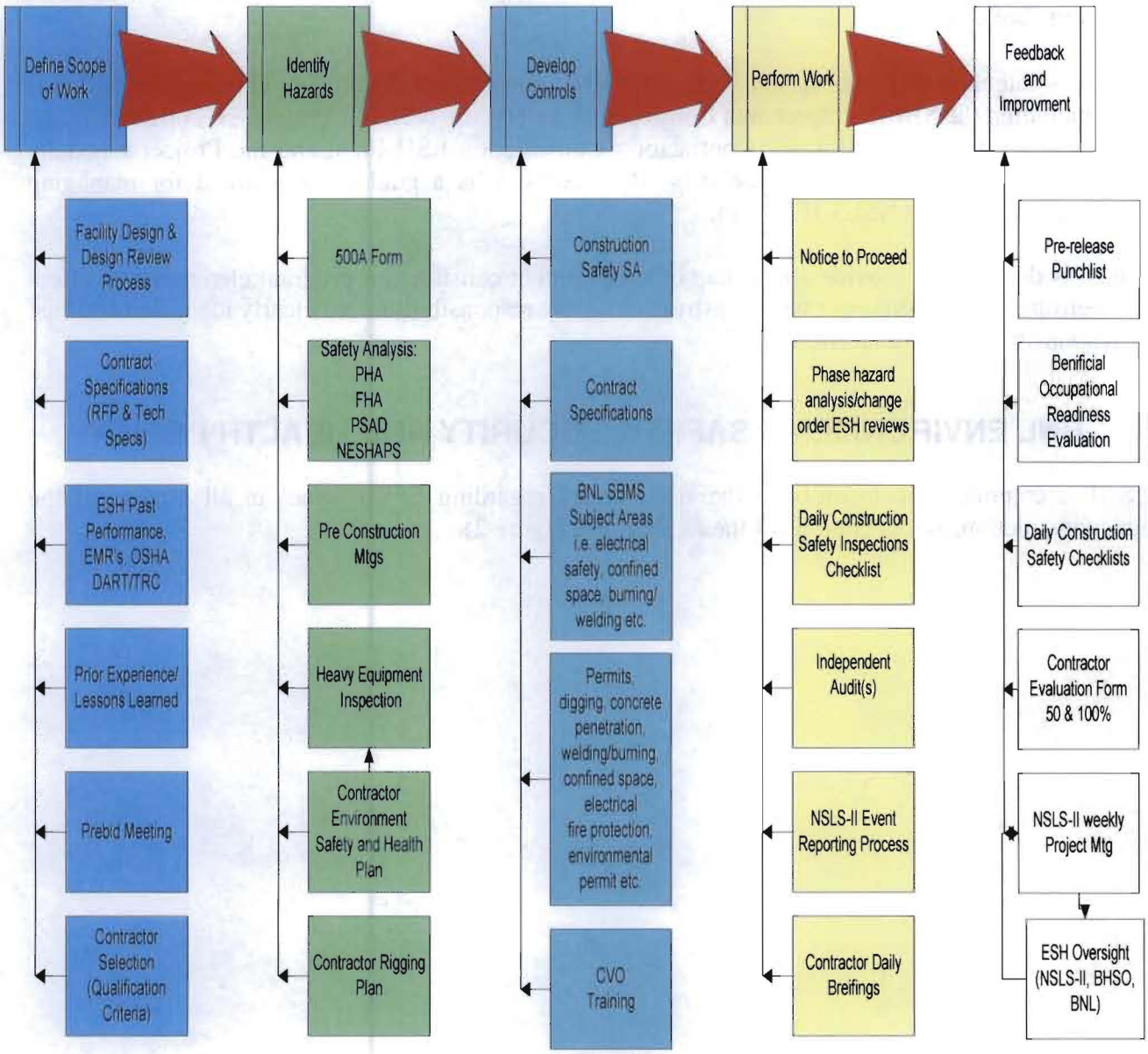
Project personnel are required to supervise and direct the work using their best management skills and technical expertise. All personnel on the Project are required to be trained in Stop Work (Imminent Danger) procedures and thus have authority and the responsibility to stop any task that represents an imminent threat to safety, health, or the environment. Only the NSLS-II Project Director (or designee), with the concurrence of the ESH Manager, can authorize a restart of the identified task.

The NSLS-II Construction PC will write a Construction Environmental, Safety and Health Plan in compliance with the Project requirements and submit it to the NSLS-II Construction Safety Engineer (CSE) for review and approval. The CESHP will meet or exceed all applicable Project safety requirements, comprehensively address all anticipated hazards for executing the construction, and identify the appropriate protective measures that will be used to mitigate the hazards. All subcontractors to the prime must follow the requirements in the prime's CESHP.

1.1 Applicability and Scope

This plan documents how the NSLS-II Project will manage the environmental protection, worker safety, and health aspects of activities carried out for conventional construction. It applies to facility design and the activities of the prime contractor and subcontractors engaged in the construction of the NSLS-II building and installation of accelerator equipment, in addition to the BNL construction support staff. It does not cover commissioning or operations, which will be addressed under another plan.

Figure 1
NSLS-II Construction
Process Integrated to ISM



1.2 Purpose

This plan has been formulated to ensure that construction of the conventional facilities of the NSLS-II address foreseeable ESH risks in a manner consistent with:

- DOE Orders
- Federal, state, and local regulations and standards
- BNL Environmental, Safety, Security, and Health Vision and Policy

- Directions from the Federal Project Director and the Site Manager of DOE's Brookhaven Site Office (BHSO)
- NSLS-II goals
- Additional concerns that BNL personnel identify during the construction, use, and maintenance of the building

This plan is intended to be consistent with other BNL and Project documents defining the NSLS-II Project, including the SBMS subject area Construction Safety, the NSLS-II Project Execution Plan, the Risk Management Plan, the Primary Contractor's Construction ESH Plan, and the Project schedule. This plan is not intended to supersede those documents; it is a guidance document for managing construction safety at the NSLS-II Project.

This plan is designed to provide a roadmap of the pertinent construction program elements that affect ESH, to ensure that all personnel with construction safety responsibilities are clearly identified and that those responsibilities are understood.

2 BNL ENVIRONMENT, SAFETY, SECURITY AND HEALTH POLICY

NSLS-II is committed to incorporate the BNL policy regarding ESSH issues in all aspects of the design, construction, and operations of the facility (see Figure 2).

BROOKHAVEN
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Environmental, Safety, Security, and Health Policy

Brookhaven National Laboratory

This document is a statement of BNL's ESSH policy. BNL is a world leader in scientific research and strives to demonstrate excellence in protecting people, property and the environment.

I expect every employee, contractor, and guest to take personal responsibility for adhering to the following principles:

Environment: We protect the environment, conserve resources, and prevent pollution.

Safety: We maintain a safe workplace and we plan our work and perform it safely. We take responsibility for the safety of ourselves, coworkers and guests.

Security: We protect people, property, information, computing systems, and facilities.

Health: We protect human health within our boundaries and in the surrounding community.

Compliance: We achieve and maintain compliance with applicable ESSH requirements.

Community: We maintain open, proactive and constructive relationships with our employees, neighbors, regulators, DOE, and our other stakeholders.

Continual Improvement: We continually improve ESSH performance.

In addition to my annual review of BNL's progress on ESSH goals and adherence to this policy, I invite all interested parties to provide me with input on our performance relative to this policy, and the policy itself.

Signed _____ September 6, 2006
Sam Aronson, Director

Figure 2: BNL ESSH Policy Statement

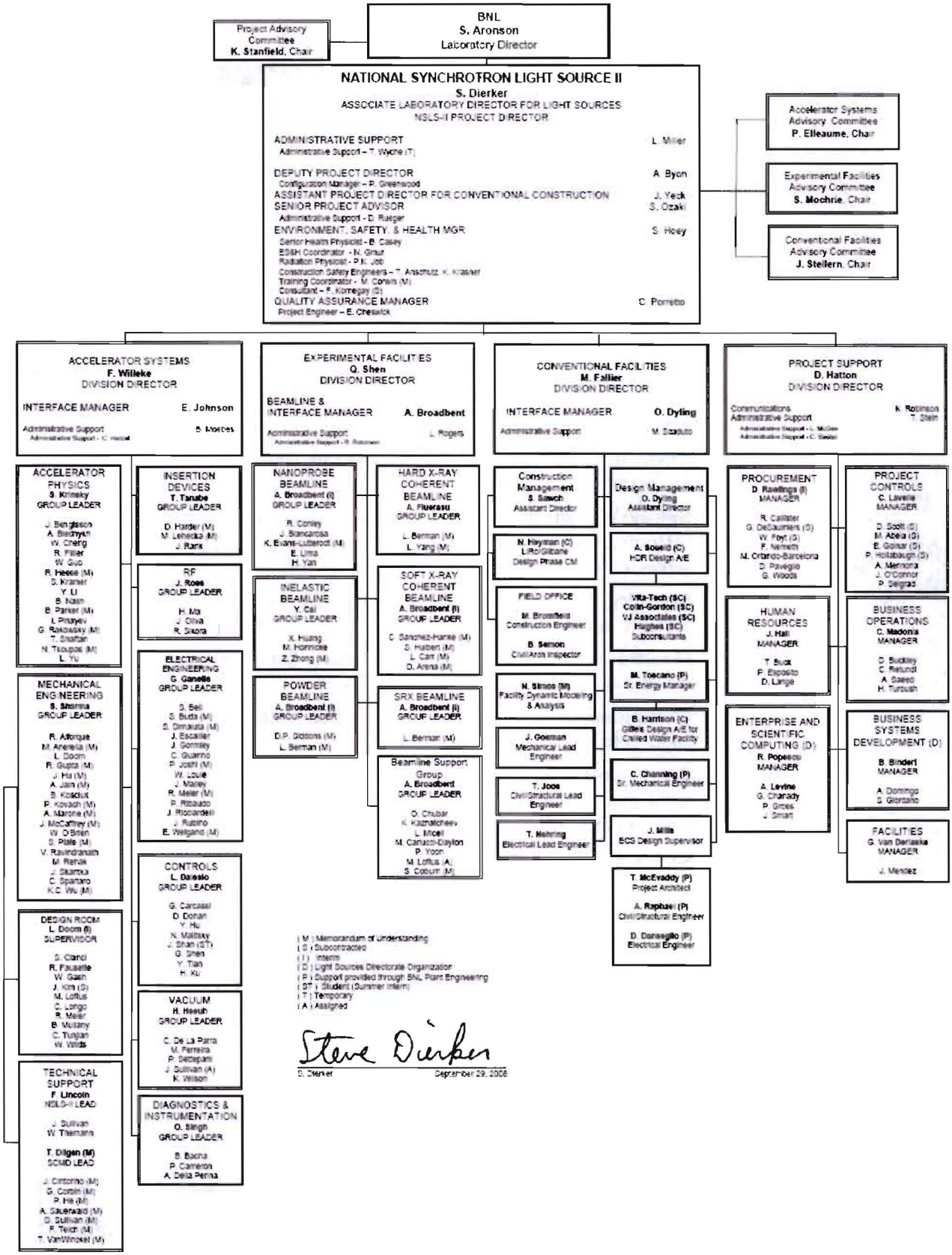


Figure 3: NSLS-II Organizational Chart

3 ORGANIZATIONAL STRUCTURE

The organizational structure of NSLS-II is shown in Figure 3 and discussed in this section.

3.1 Program Responsibility Related to Construction Safety

3.1.1 DOE SC-22 Office of Basic Energy Sciences

Within the DOE Office of Science (SC), the Office of Basic Energy Sciences (SC-22) is the DOE/HQ organization that has programmatic responsibility for the NSLS-II Project. The Associate Director for Basic Energy Sciences (BES) is the Acquisition Executive (AE). The Office of Project Assessment (SC-1.3) advises the AE on Project issues.

3.1.2 DOE – Brookhaven Site Office (BHSO)

The DOE/Brookhaven Site Office (BHSO) office will provide federal oversight for execution of the Project to include legal, contracting, environmental, and project management. The BHSO Federal Project Director has official federal responsibility and accountability for the overall success of the project. This includes overall oversight and direction of the construction safety program and communication of safety performance to DOE SC-22.

3.1.2.1 BHSO Construction Safety Engineer

The BHSO Construction Safety Engineer (BHSO CSE) reports to and advises the BHSO Federal Project Director (FPD). The BHSO CSE is responsible for evaluating the implementation of the NSLS-II construction safety program. The evaluations shall address consistency with defined expectations (i.e., conformance to internal procedures), and shall identify hazards not effectively addressed by the program. The evaluations will include regular joint safety inspections with NSLS-II personnel, the construction contractor, and subcontractor personnel.

3.2 Line Management Responsibility

ESH functions are the responsibility of the line organizations at the Laboratory. The aspects of the NSLS-II Project's technical baseline that are the responsibility of the NSLS-II line organization include the planning, review, and surveillance of health physics; industrial hygiene; As-Low-As-Reasonably-Achievable (ALARA) concerns; fire protection; industrial/occupational safety; and environmental issues. To effectively carry out these responsibilities, NSLS-II will have ESH staff dedicated to the Project and will draw on the support of ESH specialists employed in other line organizations, including the Facilities and Operations Directorate (F&O) and the ESH Directorate (ESH) as well as outside contractors. Examples of support include:

- Review and comment on the CESHP and implementation plans
- Conduct the Contractor Vendor Orientation (Course HP-Q-006) and, if required, the General Employee Radiation Training (Course HP- RWT-001)
- Supplement construction safety oversight carried out by the NSLS-II ESH staff

3.2.1 NSLS-II Project Director (PD)

The NSLS-II Project Director has full responsibility and authority for carrying out the NSLS-II Project in a manner consistent with this ESH Management Plan for Construction and other Project plans. The NSLS-II PD has the continuing responsibility to develop participation and commitment from the outside research community as well to guide the design and construction of NSLS-II to accommodate the requirements of the researchers; these duties include overall ESH responsibilities. The NSLS-II PD also is responsible for the NSLS-II user outreach programs and future transition to the operations of the new facility. The NSLS-II Project Director reports to DOE/BES through the BHSO Federal Project Director.

3.2.2 NSLS-II Deputy Project Director (DPD)

In addition to the responsibility for implementing management methods to achieve the NSLS-II scope, cost, and schedule objectives, the NSLS-II Deputy Project Director (DPD) directly supports the NSLS-II Project Director to achieve the NSLS-II Project's ESH objectives. To achieve the ESH objectives the DPD will:

- Hold the contractor responsible and accountable for successful execution of the PC's project scope of work, including ESH and quality objectives.
- Review and approve ESH staffing and planning decisions for the NSLS-II.
- Participate in regular contractor progress meetings to review ESH performance.
- Participate in periodic ESH inspections of the NSLS-II construction site to verify contractor performance.
- Communicate accurate and reliable Project ESH status and performance issues to DOE management.
- Identify and manage Project ESH risks.
- Work within the framework of the Integrated Safety Management System.
- Ensure effective implementation of the NSLS-II ESH Management Plan for Construction (this document) by NSLS-II staff.
- Review and approve Project safety analysis.
- Verify receipt of all required environmental evaluations and permits.
- Coordinate reviews for final acceptance of NSLS-II facilities and occupancy permit documentation.

3.2.3 Deputy Director for Conventional Construction (DDCC)

The Deputy Director for Conventional Construction (DDCC) directly supports the NSLS-II Project Director to implement management methods to achieve NSLS-II scope, cost, and schedule objectives, with special emphasis on conventional construction. As directed by the NSLS-II PD, the DDCC oversees and coordinates requirements of the science program's technical equipment with conventional facilities. The DDCC interacts regularly with Project Control managers to verify progress and resolve issues. The DDCC supports the PD to achieve the NSLS-II Project's ESH objectives as delineated in this ESH Management Plan for Construction.

3.2.4 Conventional Facilities Division Director (CFDD) Safety Responsibilities

The Conventional Facilities Division Director (CFDD) is directly responsible for the scope, cost, and schedule performance of conventional facility design and construction. The conventional construction will be managed as indicated in Figure 4. In this capacity, the CFDD will:

- Report to the NSLS-II Project Director or PD designee.
- Manage the efforts of the A/E firm to perform Title I and Title II design and provide Title III design support during construction.
- Administer the technical terms of the construction contracts and contracts with independent testing laboratories. Ensure that all contractors and vendors for conventional facilities perform in accordance with the terms of their contracts and purchase orders, including ESH requirements.
- Manage the BNL engineering staff review of A/E designs and coordination with BNL utilities, systems, and design standards.
- Manage the Title III construction management, inspection, quality assurance, testing, and startup of conventional facilities.
- Coordinate with the division directors to ensure technical equipment requirements are incorporated into conventional facility design.
- Coordinate with the ESH Manager to ensure that all ESH regulations, permits, and reviews are properly complied with and addressed in the design and construction of conventional facilities.
- Work within the framework of Integrated Safety Management.
- Ensure integration and consistent application of BNL standards.
- Ensure the implementation of the ESH Management Plan for Construction (this document) consistent with the intent set forth above.
- Monitor the performance of the NSLS-II construction ESH surveillance program, i.e., ensure that the program sufficiently controls ESH risk and ensures conformance with ESH requirements, as set forth in the ESH Management Plan for Construction (this document).
- Correct deficiencies in the performance of NSLS-II construction activities, particularly those that constitute noncompliance with ESH provisions in contract documents or attachments to this plan.
- Contact the NSLS-II Project Director and/or ESH Manager if uncertain about the significance of an ESH concern.
- Ensure that contract documents contain appropriate ESH specifications.
- Stop work that poses an imminent danger (immediate and serious threat) to the health or safety of people, property, or the environment. (All trained employees have this authority.)
- Require the contractor to correct deviations from the BNL-approved prime contractor's Construction ESH Plan and direct the work of the PC as provided in the contract.

3.2.5 Environmental, Safety, & Health Manager (ES&HM) Safety Responsibilities

The Environmental, Safety, and Health Manager (ES&HM) is responsible for implementing the BNL ISM program for the NSLS-II Project to ensure that environmental, safety, and health issues are addressed in the design, construction, and ultimate operations of NSLS-II. The ES&HM is the Project point-of-contact for the Occurrence Reporting and Processing System (ORPS). The ES&HM will interact with the CF Construction Management Team and manage as indicated in Figure 4. In this capacity, the ES&HM will:

- Report to the NSLS-II Project Director or PD designee.
- Oversee preparation of Hazards Analyses and ensure that the facility design addresses identified hazards wherever feasible.
- Utilize appropriate BNL ESH subject matter experts (SMEs) to prepare hazard analyses, review design documents, and oversee construction activity to ensure compliance with ESH standards.
- Oversee implementation of construction safety program to ensure compliance with BNL and OSHA regulations and monitor progress toward "Best in Class" performance.
- Be responsible for internal oversight and evaluations of the implementation of the NSLS-II construction safety program. The evaluations shall address consistency with defined expectations (i.e., conformance to internal procedures) and shall identify hazards not effectively addressed by the program.
- Oversee performance of beneficial occupancy and operational readiness evaluations of NSLS-II as required to enable timely operations in accordance with ESH requirements.
- After an abnormal event or condition, oversee and coordinate adherence to required reporting procedures, in accordance with the BNL SBMS subject areas Occurrence Reporting and Processing System, and Investigation of Incidents Accidents and Injuries.
- Serve as the primary NSLS-II interface with BNL ESH oversight personnel looking into construction-related ESH concerns, and notify the PD of plans for DOE and other non-BNL safety and environmental protection oversight activities at the NSLS-II construction site.
- Support the implementation of a construction ESH program consistent with BNL expectations by 1) identifying expectations and 2) developing the construction ESH Management Plan for implementing those expectations.
- Order the contractor and contractor employees to stop work when imminent dangers are present. (All trained employees have this authority.)
- Communicate concerns and offer constructive guidance directly to other NSLS-II Project personnel.
- Report concerns that cannot otherwise be resolved to the NSLS-II Deputy Project Director.

3.2.6 Assistant Director of Construction Management (ADCM)

The CF Assistant Director of Construction Management (ADCM) is responsible for the successful construction of conventional facilities. This entails the following duties:

- Report status and issues to the NSLS-II Conventional Facilities Director.

- Coordinate PC activities and progress.
- Administer the technical terms of the construction contracts and the contract with independent testing laboratories. Ensure that all contractors and vendors for conventional facilities perform in accordance with the terms of their contracts and purchase orders.
- Act as a key member of the Construction Management Organization and serve as Chair of the weekly construction meetings held with the PC and NSLS-II construction team.
- Implement the contractor performance measurement system.
- Manage the Title III construction management, inspection, and quality assurance efforts.
- During construction, coordinate A/E field oversight, prime contractor and commissioning contractor activities, and in-house inspection and engineering review teams.
- Manage the Title III construction management, inspection, quality assurance, testing, and startup of the conventional facilities.
- Verify implementation of the NSLS-II Quality Assurance Plan requirements for construction.
- Coordinate with the ES&H Manager to ensure that all ES&H regulations, permits, and reviews are properly complied with and addressed in the design and construction of the conventional facilities.
- Work within the framework of the Integrated Safety Management program.

3.2.7 Assistant Director of Design Management (ADDM)

The CF Assistant Director of Construction Management (ADCM) is responsible for executing and coordinating conventional construction activities. This entails the following duties:

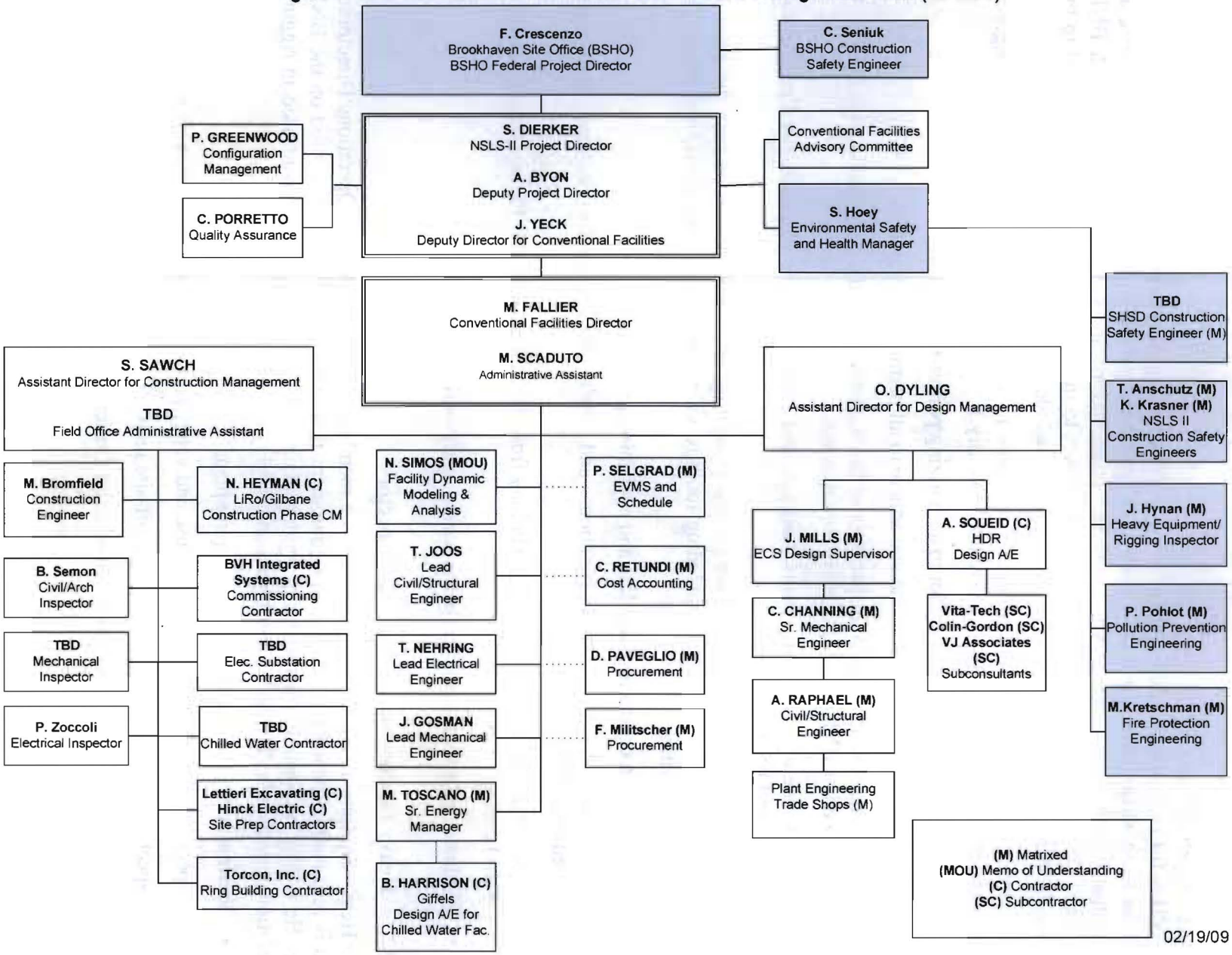
- Manage the efforts of the A/E firm to perform Title III services.
- Coordinate technical design requirements during construction.
- Coordinate efforts of A/E Title III support and commissioning contractor with PC.
- Coordinate PE engineering and construction inspection staff oversight of the NSLS-II construction.
- Manage NSLS-II Construction Documentation transmittal and filing systems.
- Ensure that all ESH design requirements for conventional construction are addressed and implemented.
- Coordinate responses to NSLS-II ECNs and PC RFIs.
- Manage the BNL and A/E engineering staff review of contractor submittals, ECNs, and coordination with BNL utilities, systems, and operating requirements.
- Coordinate the technical design requirements of the NSLS-II Directors, the ESH design requirements, and BNL's conventional facility design requirements with the A/E Project Manager to ensure that all BNL design requirements are incorporated by the A/E firm.

3.3 NSLS-II ES&H Team

The purpose of the NSLS-II Construction Safety Organization (Figure 4) is to ensure that construction activities are managed in compliance with applicable OSHA regulations, EPA requirements (federal, state, and local), DOE Orders, and BNL policies and procedures, including the Laboratory's Integrated Safety Management Program Description. The Construction Safety Organization is concerned with the effective implementation of safe work practices, including preparing contractors for work at BNL and conducting work surveillance needed to verify that contractors are meeting the requirements for ESH. Figure 2 depicts the relationship of ISMS to NSLS-II construction safety.

The Conventional Construction Safety Team reports to the ESH Manager and consists of subject matter experts responsible for maintaining construction safety. The Safety and Health Services Division (SHSD) ESH Construction Safety Engineer will review and approve contractor safety plans, consult on the preparation and approval of specific work plans and permits, and conduct periodic inspections of the Project to ensure compliance with BNL and OSHA standards and adherence to the contractor's approved ESH Plan. The NSLS-II CSE will perform daily jobsite inspections, monitor jobsite activities for OSHA compliance, document all safety infractions, and bring them to the attention of the Prime Contractor Safety Representative for prompt correction. The Heavy Equipment and Rigging Inspector or designee will inspect all mechanical equipment, review and approve all required rigging plans, and inspect rigging activities. All regular periodic inspections of lifting equipment, which is required by OSHA Standards, will be performed and documented by the contractor performing the rigging. The Pollution Prevention Engineer will receive and review applicable sections of contractor submittals and will conduct periodic observations of jobsite activities for verification of environmental compliance, progress toward pollution prevention goals, and certification in Leadership in Energy and Environmental Design (LEED).

Figure 4. NSLS-II Conventional Facilities Construction Management Team (CF CMT)



3.3.1 NSLS-II Construction Safety Engineers

3.3.1.1 Safety Responsibilities

The NSLS-II Construction Safety Engineers are responsible for monitoring construction activities on a daily basis to ensure that the prime contractor (and subcontractors) 1) work safely, 2) work in conformance with their approved ESH plan and phase hazard analyses, and 3) comply with BNL, DOE, and OSHA safety requirements. The CSEs report to the ESH Manager and are matrixed to the Conventional Facilities Director. CSE responsibilities include the following:

- Order the contractor and contractor employees to stop work when an imminent danger is present. (All trained employees have this authority.)
- Verify that permits are issued prior to authorizing permit-required work.
- Ensure that contractors understand and adhere to all permit requirements.
- Perform and document daily inspections of the worksite to verify compliance with the CESH Plan as well as BNL and OSHA ESH requirements.
- Communicate all inspection results, findings, and concerns to the Conventional Construction Manager and ESH Manager.
- Assist and advise the PC in planning and promoting ESH activities to address the hazards identified in the CESH Plan, including toolbox safety meetings, work plans, and other risk reduction activities.
- Assist others in conducting accident and near-miss investigations.
- Identify and document ESH violations and verify that corrective actions have been implemented before work resumes.
- Require the contractor to correct deviations from BNL-approved Job Phase Hazard Analysis (PHA) control requirements.
- Evaluate and accept (approve) phase hazard analysis/risk analyses.

3.3.2 Heavy Equipment and Rigging Inspector

The Heavy Equipment and Rigging Inspector is a member of the Facilities and Operations Directorate and is responsible for verifying that heavy equipment is safe for use prior to being used on the BNL site. He is also responsible for reviewing rigging plans and inspecting all equipment used in rigging operations prior to use. The heavy equipment and rigging inspector will:

- Review and approve all lifting and rigging plans.
- Inspect all rigging equipment prior to use and verify proper execution of rigging plans.
- Inspect all heavy equipment, including off-site inspection of over-the-road cranes.
- Advise the BNL Lifting Safety Committee on Critical Lifts.

3.3.3 Safety and Health Services Division ESH Construction Safety Engineer

- The SHSD Construction Safety Engineer (ESH CSE) reports to the Manager of the Safety and Health Services Division and advises the NSLS-II ESH Manager. The SHSD CSE is responsible for evaluating the implementation of the NSLS-II construction safety program. The evaluations shall address consistency with defined expectations (i.e., conformance to internal procedures) and identify hazards not effectively addressed by the program. The evaluations will include periodic joint safety inspections with NSLS-II personnel and construction contractor and subcontractor personnel.
- The SHSD CSE is also responsible for identifying program requirements and reviewing and commenting on the NSLS-II PC's Construction ESH Plan, to ensure that it comprehensively addresses 1) NSLS-II construction hazards in accordance with OSHA and DOE/BNL requirements and 2) the model plan provided as part of the bid documents. The SHSD CSE will act for (back up) the NSLS-II CSEs when they are not available.
- Order the contractor and contractor employees to stop work when imminent dangers are present. (All trained employees have this authority.)
- Communicate concerns and offer constructive guidance directly to the NSLS-II ESH Manager and the NSLS-II Project Director. In addition, the SHSD CSE can offer constructive guidance to other NSLS-II Project personnel directly when confirming communications are sent to the NSLS-II ESH Manager.
- Report concerns that cannot otherwise be resolved to the NSLS-II Project Director.

3.3.4 Pollution Prevention Coordinator & Environmental Compliance Rep

The Pollution Prevention Coordinator and/or Environmental Compliance Representative will 1) receive and review applicable sections of contractor submittals and 2) conduct periodic inspections of jobsite activities for verification of environmental compliance and progress toward pollution prevention goals and LEED certification. Periodic inspections may include:

- Hazardous material storage and use practices
- Industrial and hazardous waste management practices
- Recycling efforts
- Use of environmentally preferable products

3.3.5 Quality Assurance

The Quality Assurance Representative will provide oversight of the quality aspects of the Project related to 1) equipment procurement of and maintenance and 2) implementation of the Project Quality Assurance Plan. The QA Representative will periodically audit the implementation of the PC's Quality Assurance Plan.

3.3.6 Fire Protection Engineer (FPE)

The Fire Protection Engineer will oversee fire protection measures for the NSLS-II Project, including any interim measures implemented during construction. The FPE will utilize the BNL Fire Department

staff for periodic surveillance of the construction site to ensure that required protective measures are in place. The FPE will also review and approve designs, installation, and final testing and certification of fire safety systems.

3.4 Conventional Construction Field Team

3.4.1 NSLS-II Construction Engineer (CE)

The NSLS-II Construction Engineer will be responsible for continuous day-to-day oversight of the prime contractor's activities. The NSLS-II CE must have extensive construction experience, including familiarity with OSHA construction safety regulations, and must have received OSHA 10 hour construction safety training, as a minimum. Oversight and responsibilities will include the following:

- Verify that construction is carried out in accordance with the plans and specifications.
- Verify that the contractor is performing work in accordance with the approved CESHPP.
- Coordinate with Contractor Superintendent, Contractor Safety Representative, and BNL organizations as required to secure permits and approvals needed to perform work.
- Stop work whenever there is imminent hazard to personnel, the environment, or BNL facilities.
- Prepare daily field reports indicating contractor staffing levels, work planned and accomplished, notable communications or directions to the contractor, identified issues requiring decision or action, contractors' compliance with CESH Plan, and OSHA/BNL/DOE requirements.
- Consult with BNL ESH SMEs whenever there are safety issues or concerns.
- Promptly communicate with the NSLS-II CCDM when there are technical or safety performance issues.
- Maintain a record of all Project documents and submittals relating to the status of design and construction in the field.
- Communicate approved design changes to the contractor and maintain a record of actual installation in the field.

3.4.2 BNL Engineering Review Team (ERT)

The ERT consists of BNL engineers in each discipline that are responsible to:

- Coordinate A/E design and any ECNs with requirements of any existing BNL utilities and systems.
- Review contractor submittals to ensure conformance with BNL requirements.
- Resolve any engineering design or technical issues that develop during construction, in consultation with the A/E.

3.4.3 BNL Construction Inspection Team (CIT)

The CIT consists of experienced inspectors for each trade that are responsible to:

- Inspect work of the contractor to verify conformance of installed work with contract plans and specifications.
- Coordinate work of BNL support groups with contractor to ensure that all required permits are in place prior to commencement of work.
- Ensure that contractors perform work in accordance with applicable work control requirements.
- Coordinate with the NSLS-II CSEs to ensure that work progresses in accordance with the contract and ESH requirements.
- Review contractor payment requests to verify completed quantities.

3.5 NSLS-II Construction Prime Contractor

The NSLS-II Construction Prime Contractor will have responsibility for the safety of contractor and subcontractor personnel on the NSLS-II construction site. The PC must flow down all ESH requirements to all subcontractors. The PC must prepare and implement a Construction ESH Plan (CESHP) that identifies all anticipated hazards and identifies safety precautions to mitigate those hazards. The PC must modify, with BNL approval, the CESH Plan to address any changed conditions.

3.5.1 Contractor Safety Manager

The Contractor Safety Manager is responsible for instituting the prime contractor's CESHP throughout the life of the contract for all construction activities and for all subcontractors hired by the PC. The Contractor Safety Manager is responsible to:

- Verify that all field work is performed in accordance with the approved CESHP and OSHA and BNL/DOE regulations.
- Proactively plan work so that hazard controls are ready and available on a timely basis to enable work to progress.
- Communicate hazards to contractor and subcontractor employees.
- Perform or verify performance of weekly toolbox safety meetings.
- Verify that appropriate permits are in place prior to work commencing.
- Verify that all contractor and subcontractor workers have appropriate training.
- Verify that all hoisting and rigging activities are compliant with the approved rigging plans, and serve as the competent person for those activities.
- Maintain and update the approved CESHP as conditions change, based on the most current identification of hazards and appropriate approved hazard controls.
- Be present at the jobsite whenever work is underway or assign an appropriately trained and qualified substitute when not at the jobsite.

3.6 Project Oversight

3.6.1 NSLS-II Construction Management Team (CMT)

The NSLS-II Construction Management Team is led by the NSLS-II Deputy Project Director for Conventional Construction (DDCC) and includes the NSLS-II Conventional Facilities Division Director, Conventional Facilities Assistant Director of Construction Management, Conventional Facilities Assistant Director of Design Management, the ESH Manager, and others deemed necessary by the DDCC. The CMT is responsible for the following:

- Assign action items to appropriate team members and track the issue until completed.
- Consult with the NSLS-II Integrated Project Team quarterly, and more often when approaching DOE Critical Decision dates.
- Identify, prepare, and manage documentation needed for successful management of the Project.
- Communicate issues identified during the design, construction, and commissioning of the facility.

3.6.2 NSLS-II Integrated Project Team (IPT)

The IPT for the NSLS-II Project will consist of members from both DOE and the contractor, BSA. To ensure that the necessary skills are always represented to meet project needs, the IPT membership will change as a project progresses from initiation to closeout. The IPT will:

- Support the Federal Project Director.
- Develop and/or participate in project planning, baseline development, and contracting.
- Ensure all project interfaces are identified, completely defined, and managed to completion.
- Identify and define appropriate and adequate scope, schedule, and cost parameters.
- Support the preparation, review, and approval of project documentation including Critical Decision packages.
- Review and assess project performance and status against established performance parameters, the baseline, milestones, and deliverables.
- Identify and resolve issues.
- Plan and participate in project reviews, assessments, and appraisals as necessary.
- Review and evaluate baseline and funding change requests and support the Change Control Boards as requested.
- Plan and participate in operational readiness assessments.
- Support the preparation, review, and approval of project completion and closeout documentation.

4 PERMITS AND ENVIRONMENTAL SUBMITTALS

The NSLS-II Project has been reviewed for applicability of NEPA and has been determined to be categorically excluded (Determination dated 10/6/03). The Project has been reviewed by environmental SMEs who have determined that new NESHAPs and SPDES permits will not be required. This conclusion was re-affirmed as a result of a review to evaluate potential impacts from the completion of the 100% design.

5 PROCEDURES/CONTROLS

The NSLS-II construction project shall meet all requirements of the BNL Standards Based Management System (SBMS), ESH Standards, and all other codes and standards as specified in the Technical Specifications and the contract. In cases of conflict, the standard providing the greater protection shall govern. The Conventional Construction Manager will call on M&O and ESH personnel to provide support in the conduct of all work, where required to do so by BNL policies and procedures.

5.1 ESH Baseline Surveys

All required ESH Baseline Surveys, including the EP 500A Form and other necessary Industrial Hygiene personnel protection monitoring, will be performed in accordance with BNL procedures. All baseline surveys will be documented in accordance with the BNL SBMS subject area Records Management. Results will be promptly communicated to the Contractor Safety Representative to ensure necessary actions.

5.2 Project Design Review

The NSLS-II design has met the requirements of the BNL SBMS subject area Engineering Design, including review by ESH SMEs. During construction, whenever additional design or modification is required to address field changes, the NSLS-II construction management program will follow the procedures set forth in the BNL SBMS subject area Engineering Design.

5.3 Pre-Bid Conference

A pre-bid conference was held during the bidding period to ensure that interested contractors are aware of BNL requirements with regard to construction safety, security, and environmental protection. Any notable information communicated at this meeting will be presented to all interested bidders.

5.4 Contractor Selection Process

The method of procurement for NSLS-II was a Best Value Request for Proposal contract, wherein contractors were required to meet predetermined qualification criteria in order to qualify to be awarded a contract. The highest technically rated contractor with acceptable cost received the award. The qualification criteria for NSLS-II included stringent safety performance requirements in addition to technical experience requirements. This included three years of recent construction safety performance

that is better than the national average for their work category and having an insurance Experience Modification Rate (EMR) that is equal to or less than 1.0 (i.e., a better-than-average loss history). These enhanced safety criteria are also required of all subcontractors. The prime contractor was also required to demonstrate an effective corporate safety program and submit a comprehensive corporate Environment, Safety and Health Plan for review as a prerequisite for award.

5.5 Construction Environment, Safety and Health Plan Evaluation

After award of the NSLS-II contract to a contractor that has met all construction safety criteria, the contractor must submit a Project-specific CESHP for review by the NSLS-II CSE. The CSE has the primary responsibility for review and approval of the CESHP with input from the Lab Construction CSE and the BHSO CSE. The CESHP must comprehensively address all anticipated hazards of the Project by providing a phased hazard analysis and identifying the means to be used to address each of these hazards during the Project. It also identifies by name the contractor Safety Manager who will be responsible for safety performance of all contractor activities, and names the various "competent persons" required by OSHA for various construction tasks.

The approved CESHP then becomes a controlled document that forms the basis for the PC's execution of its on-site safety program. This document is modified and updated as new conditions arise or new hazards are identified. Modifications to the CESHP are reviewed and approved by the SHSD CSE.

5.6 Notice to Proceed

A Notice to Proceed will be issued by NSLS-II. No physical work by the contractor will commence until this notice is issued. The issuance of the Notice to Proceed is contingent upon receipt of all required bonds and insurance documents and approval of the contractor's CESHP.

5.7 Construction Safety Program Implementation

The NSLS-II construction management program will follow the procedures set forth in the BNL SBMS subject area Construction Safety and the NSLS-II policies and procedures related to that topic.

5.8 Pre-Construction Meeting

NSLS-II will set up a Pre-Construction Meeting with the contractor representatives, at which time ESH issues, safety awareness issues, submittal procedures, and site organization procedures will be addressed. The Contractor's superintendents, supervisors, and foremen are required to attend the Pre-Construction Meeting. The agenda for this meeting will follow the requirements of LT–CF-04-002, "Pre-Construction Meetings."

5.9 ESH Work Permit

Prior to physical construction, a work permit shall be prepared to identify anticipated hazards for the worksite, how these hazards will be controlled, who may be affected by these hazards, and the personnel contact points related to this work activity. This work permit shall be posted at the job site.

This work permit is for general information; it references the more detailed information of hazard analysis and methods of control contained in the contractor's CESHP.

5.10 Contractor Vendor Orientation (CVO)

All subcontractors and tiered subcontractors are required to attend CVO training on their first day on-site, as per Technical Specification 1.14. Training is provided on a daily basis at Building 422 between the hours of 8:30 and 10:30 a.m. Upon completion of the training a card will be issued that must be signed by NSLS-II and then processed by Safeguards and Security personnel at Building 400 to provide a photo Contractor Identification Badge.

5.11 Contractor Access and Badging

All Prime Contractor and subcontractor employees must attend Contractor/Vendor Orientation Training (see 5.10) and be approved by BNL in order to work on the BNL site, per the General Conditions Section 1.13 of the Contract.

5.12 Heavy Equipment and Rigging Inspection Procedure

The NSLS-II construction management program will follow the procedures set forth in the BNL SBMS subject area Lifting Safety and the following NSLS-II procedures:

LT-ESH-P-00011, Heavy Equipment Inspection
LT-ESH-0018, Rigging Inspection

5.13 Schedule and Manpower Reporting

The BNL Construction Engineer will prepare a daily Field Report in accordance with LT CF-03-001 "Daily Construction Reports." These reports will indicate the nature of work conditions, tasks in progress, any issues or direction given, and a head count and the trades of contractor and subcontractor personnel on site. In addition, all contractors entering the BNL site will have their ID badges scanned when entering to verify that their badge is valid and to provide a record of their presence.

5.14 Weekly Construction Progress Meeting

Once construction activity approaches a level where it is deemed appropriate by the Conventional Construction Manager, there will be a weekly construction progress meeting involving the contractor, key subcontractors, and BHSO, CFCMT, and ESH Representatives. Construction safety status will be a standing agenda item at each meeting. Discussion will include 1) a look ahead at planned near-term activity to ensure that appropriate safety controls will be provided and 2) a review of the previous week's performance to identify areas for improvement or recognize and acknowledge excellent performance. This meeting will be organized by the CFDD and will be documented in meeting minutes identifying an action, a responsible individual, and date required. Meeting minutes will be distributed weekly to all attendees and NSLS-II CF CMT members.

5.15 Contractors' Schedule

When the PC's schedule is approved, the approved copy shall be distributed to the CFCMT members. The schedule will be used to identify planned dates for work activities and the corresponding hazard controls necessary to be in place for these activities. The schedule and near-term work plans will be a standing agenda item at the weekly construction progress meeting.

5.16 Construction Safety Inspection

The NSLS-II construction site shall be inspected for ESH issues on a daily basis. These inspections will be documented using the procedure in the BNL SBMS subject area Construction Safety, and using the construction safety checklist and the following LT procedure:

LT-ESH-P-00013, Safety Inspections

The NSLS-II Construction Safety Engineer has primary responsibility for these inspections. The SHSD CSE will serve as the backup for the NSLS-II CSE.

5.17 Accident and Near-Miss Investigation and Reporting

The NSLS-II construction management program will follow the procedures set forth in the BNL SBMS subject area Investigation of Incidents, Accidents and Injuries, and the BNL SBMS subject area Occurrence Reporting.

In addition, in the event of any incident with the potential for lost work time or significant environmental impact, the call-down list will be initiated to ensure proper notification of these events. See Figure 5 for the event reporting flow. The following NSLS-II procedure applies for reporting requirements:

LT-ESH-P-00012 , Reporting of Events

All ESH-related incidents or issues that may have an adverse consequence on people, property, or the environment will be reported to BHSO via the designated DOE Federal Project Manager or BHSO representative.

The following minimum criteria will be used as guidance for reporting to BHSO:

- Incidents likely to result in lost workday injuries or reportable environmental consequences
- Near misses deemed significant enough to have caused an injury or reportable environmental consequence
- Incidents reportable according to Occurrence Reporting and Processing System (ORPS) requirements
- Damage to equipment (BNL or contractor) in excess of $5,000
- Findings and recommendations resulting from Independent Oversight and Assessment (IO&A) activities
- Significant instances of contractor noncompliance observed during routine internal surveillance

5.18 Contractor Construction Safety Incentive

BSA feels that a well-designed safety incentive will further motivate an already top-performing contractor to strive for continuous improvement and perform at a best-in-class level. The safety incentive must be substantial, achievable, and fairly implemented. To this end BSA has developed the following safety incentive based three factors: 1) accident injury rates, 2) violation of serious OSHA requirements, and 3) responsiveness to less serious OSHA requirements. The details of this safety incentive are included in Appendix A of this plan.

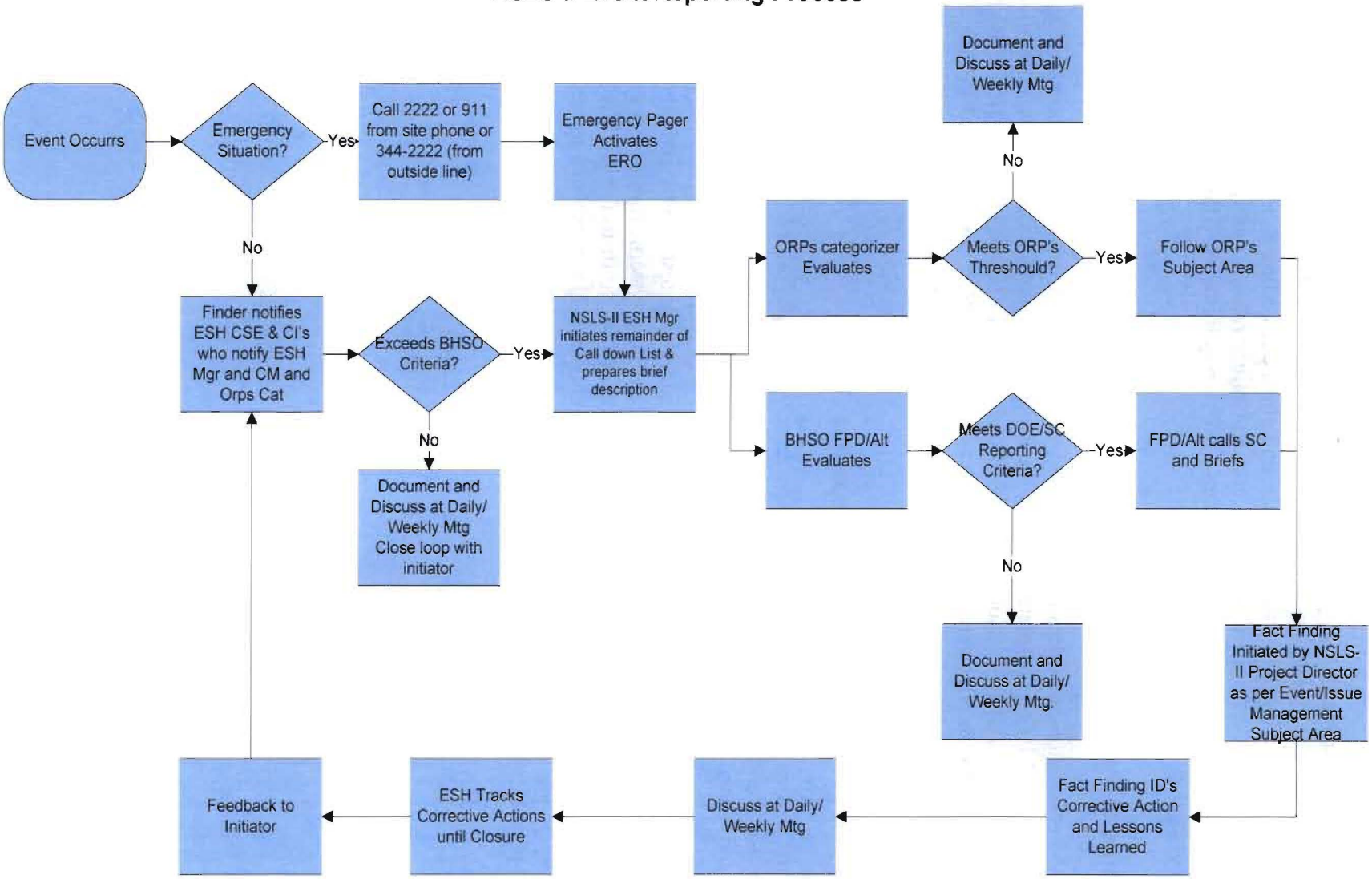
5.19 Contractor Performance Measurement

In addition to the contractor construction safety incentive, the contractor's safety performance will be evaluated at the 50% and 100% complete phases of the Project. This evaluation is in concert with other contractor performance evaluation factors as indicated under LT CF-04-006 "Construction Contractor Evaluation." This evaluation is performed by the cognizant members of the Integrated Project Team and provides a documented record of the contractor's performance for consideration in future awards of contracts at BNL.

5.20 Final Inspection, Testing, and Acceptance

Final inspection, testing, and acceptance of construction will be performed in accordance with the Project specifications and drawings and in accordance with NSLS-II procedures. Building systems will be inspected and tested in accordance with the NSLS-II Commissioning Plan prepared by the Commissioning Contractor. The Commissioning Contractor will prepare testing and inspection plans, verify contractor performance during installation, observe and verify test results and any retests, and provide a final commissioning report verifying readiness of building systems for operation. The NSLS-II construction management program will follow the procedures set forth in the BNL SBMS subject area Operational Readiness Evaluation for 1) preparing the building, 2) training maintenance staff, and 3) preparing documentation needed to transfer responsibility for the NSLS-II building from construction to operations.

Figure 5
NSLS-II Event Reporting Process



5.21 Hazard-Specific Safety Procedures

BNL and NSLS-II have numerous hazard-specific safety procedures that address requirements re not specifically addressed by national consensus standards or that provide additional safeguards beyond consensus standards to meet the operational objectives contained in the BNL/DOE contract. These procedures include added precautions that enhance the protection of workers, the environment, and facilities at BNL and provide guidance to NSLS-II staff and the PC. Additional procedures will be developed as necessary.

LT-ESH P00016, Permits
[digging, welding, burning, electrical, radiological]

LT-ESH-P-00017, Heat Stress

5.22 Construction Site Security

Security of the NSLS-II construction site will be maintained by the combination of the BNL site security program and the PC's obligations under the contract. BNL security will verify that all personnel entering the BNL site each day are authorized to do so. All contractor employees must prominently display their contractor identification badges at all times. BNL security staff will perform periodic surveillance of the site. The PC is responsible for the behavior and actions of all PC and subcontractor employees. The PC is also responsible for maintaining, protecting, and securing all materials delivered to the site. The PC will also install a 6-foot chain link security fence around the construction site to maintain security and control access to the site. BNL will install a continuous live web camera for continuous video surveillance of the site. Although the web camera is not principally intended for security purposes, all personnel will be notified of its use, and this may serve to augment site security. All access to the construction site must be pre-approved as per LT-ESH-P00014, "Site Access for Visitors, Guests and Authorized Personnel," 24 hours in advance. All visiting personnel to the site must be escorted by an authorized individual and must don all appropriate personnel protection equipment as indicated by the escort.

5.23 Traffic and Vehicle Safety

All staff and contractors are expected to abide by NY State vehicle and traffic laws and specific BNL requirements as delineated in the SBMS subject area Traffic Safety. These rules include:

1. Park on site only on paved or stone-covered areas and only where it does not interfere with the flow of traffic or the with the movement of emergency vehicles.
2. Parking is specifically prohibited
   - In designated no parking zones, which are identified by yellow markings or signs
   - On the wrong side of the street
   - In handicapped spaces unless the appropriate permit is displayed
   - In fire lanes

- Within 15 feet of a fire hydrant

3. All vehicles must have a valid NY state registration.
4. The laboratory speed limit is 30 mph unless otherwise posted.
5. All vehicle occupants must wear seatbelts.

The BNL Police Group will enforce these rules and issue citations of violations.

Traffic citations will adversely impact the safety incentive.

5.24 NSLS-II Construction Site Access

Only authorized personnel are permitted on the NSLS-II construction site unescorted. The Conventional Facilities Division Manager (or designee) has the sole authority to determine the personnel that are authorized. A dated list will be maintained in the BNL NSLS-II project trailer.

Visitor and guest access to the site must be pre-arraigned at least 24 hours in advance of the intended site visit, and visitors must be accompanied by an authorized person. All personnel (authorized and guests/visitors) must comply with training and PPE requirements. The details of site access are covered in the procedure:

LT-ESH-P-00014, Site Access for Visitors, Guests and Authorized Personnel

5.25 NSLS-II Stop Work Policy

Imminent Hazard: "Any condition or act that may cause death, serious injury or illness, significant property damage, and has a high probability of causing an accident or loss before corrective action can be taken through normal administrative channels, of the entire Project or a selected activity."

Work Interruption: "The interruption of the entire Project or a selected activity for reasons other than conditions of imminent danger, i.e., technical, contractual, or unsafe conditions not critical in nature."

Policy: A Stop Work Notice (SWN) shall be initiated for the NSLS-II Project when there is an unacceptable risk, as follows:

- An imminent danger situation
- A potential for property or environmental damage
- A potential for threat to personnel safety
- A failure to correct safety deficiencies in a timely manner
- A failure to prevent repeat violations

A Stop Work Notice can be initiated by any qualified person.

Issues not meeting the threshold for a SWN may require a "work interruption." A work interruption shall be documented in the Project log, and the Conventional Construction Manager shall be notified. All stop work and work interruptions shall follow the NSLS-II procedure:

LT-ESH-P-00015, Stop Work and Work Interruption

6 REFERENCES

1. BNL Policy Manual
2. BNL SBMS subject area Construction Safety
3. NSLS-II Project Execution Plan
4. BNL SBMS subject area Excavation Safety
5. BNL SBMS subject area Investigation of Incidents, Accidents and Injuries
6. BNL SBMS subject area Occurrence Reporting
7. BNL SBMS subject area Operational Readiness Evaluation
8. BNL SBMS subject area Engineering Design
9. BNL SBMS subject area Project Management
10. DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets
11. DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees
12. DOE Guide 440.1-2, Construction Safety Management Guide for Use with DOE Order 440.1
13. DOE Manual 413.3-1, Project Management for the Acquisition of Capital Assets
14. LT-CF-04-006, Construction Contractor Evaluation
15. LT-CF-04-002, Pre-Construction Meetings
16. LT-ESH-P-00011, Heavy Equipment Inspection
17. LT-ESH-P-00012, Reporting of Events
18. LT-ESH-P-00013, Safety Inspections
19. LT-ESH-P-00014, Site Access for Visitors, Guests, and Authorized Personnel
20. LT-ESH-P-00015, Stop Work and Work Interruption
21. LT-ESH-P-00016, Permits [welding, burning, electrical, radiological]
22. LT-ESH-P-00017, Heat Stress
23. LT-ESH-P-00018, Rigging Inspection

Appendix A: Article 44 – Safety Incentive

(a) BSA believes that a well-designed safety incentive will further motivate an already top performing contractor to strive for continuous improvement and perform at a best in class level. This safety incentive must be substantial, achievable and fairly implemented. To this end, BSA has developed the following safety incentive based on three factors; 1) Accident/Injury Rates; 2) Serious violation of OSHA requirements and 3) Responsiveness to less serious OSHA violations. The value of the safety incentive for the term of the contract has been set at Two Million US Dollars ($2,000,000.00). This earned incentive will be paid by BSA to the Contractor, over and above the contract price, for superior safety performance. The details of this safety incentive are as follows:

The U.S. Department of Energy (USDOE) construction average for Days Away, Restricted, Transferred (DART) Rate and the Lost Work Day (LWD) case rates will be used in determining the award. The DART rate will be based on the rates for the most recent full year as presented in the USDOE Computerized Accident, Incident Reporting System (CAIRS) database. The LWD rate will be based on the most recent three year rolling average as presented in the USDOE Computerized Accident, Incident Reporting System (CAIRS) database. Note: The USDOE Construction averages are considerably lower than the Bureau of Labor Statistics rates for the construction industry which is consistent with striving for a "Best in Class" performance.

The USDOE CAIRS average rates established for the first award period are:

Category	Rate
2007 DART	0.6 cases/200,000 person hours
2005-2007 LWD (avg)	0.28 cases/200,000 person hours

Additional periods will be based on the latest year published USDOE CAIRS construction average for the DART and the latest three-year average for the LWD case rate.

All work-related illness and injuries, as defined in 29CFR 1904, Final Rule, the OSHA record keeping guidelines for Occupational Injuries and Illnesses, effective January 1, 2002, that occur during the performance of this contract shall be reported as called for in the BSA specification.

The safety incentive for the term of the contract has been set at a maximum of Two Million US Dollars ($2,000,000.00) to be awarded as follows: Up to Five Hundred Thousand US Dollars ($500,000) to be awarded annually 3 times, on the anniversary date of BSA's Notice to Proceed, over the length of the contract; and a final incentive of up to Five Hundred Thousand US Dollars ($500,000) when the contract is completed. The basis for the award will be as follows:

(b) Annual Award

The first award will be made on the basis of DART and LWD case rates at the end of the first year following BSA's Notice to Proceed, An additional award will be made each succeeding year for a maximum of three annual awards. Annual awards are not cumulative.

No award will be made if the DART rate or LWD rate for the combined contractor and sub-contractor (working on site) rate is greater than USDOE construction average (from CAIRS).

50% of the maximum award ($250,000) will be granted if the DART Rate and LWD rate for the combined contractor and all sub-contractors at the site is less than or equal to the USDOE construction annual average (from CAIRS) for the DART rate and three year rolling average for the LWD rate.

Additional award is earned based on the percentage difference below the USDOE average LWD rate only, reaching 100% at 50% of the USDOE average LWD rate. (See table 1 below based on DOE Construction rates from 2005-2007 average).

Table 1, Award amounts based on a 2005-2007 DOE LWD averaged rate of 0.28 DART rate is below annual DOE CAIRS DART rate

LWD Rate	Award Amount
>0.28	$0
0.28	$250,000 (50% of full award)
0.27	$267,857
0.26	$285,714
0.25	$303,571
0.24	$321428
0.23	$339,285
0.22	$357,142
0.21	$374999
0.20	$392,856
0.19	$410,713
0.185	$428,570
0.17.	$446,427
0.16	$464284
0.15	$482,141
0.14 (50% of DOE rate)	$500,000 (100% of full award)

(c) Reductions in Award

There will be a $5,000 reduction of the earned annual award for each significant instance of OSHA violations, including but not limited to:

1. Fall Protection. Any worker not properly using appropriate fall protection systems.
2. Confined Space. Entry into a confined space without a required confined space permit or violation of permit requirements.
3. Lock-out Tag-out (LOTO). Failure to use when required the LOTO procedures as approved in the Prime Contractor's Safety Plan.
4. Electrical. Any work on or near energized parts without a required Energized Electrical Work Permit or violation of permit requirements.
5. Failure to report injuries. Failure to report a recordable work related injury or illness as defined in 29CFR1904.
6. Fire Protection. Any fire caused by insufficient or inadequate fire protection measures. i.e., failure to obtain a Hot Work Permit, required for welding or other hot work, or work performed without a fire watch and appropriate extinguisher.
7. Hidden Hazards. Excavation without a required Dig/Penetration Permit or violation of the requirements of a Dig Penetration Permit.

8. Shoring Hazards. Failure to protect all excavations from cave-ins by adequate protection systems designed in accordance with 29 CFR 1926.652.

In addition there will be a $5000 reduction of the earned annual award for lack of responsiveness to less significant issue(s) called to the attention of the General Contractor, including but not limited to:

1. Personnel Protective Equipment. Repeated violations of any worker not wearing personal protective equipment as required in the contact documentation or in the Prime Contractors ES&H Plan.
2. Housekeeping. Repeated housekeeping issues at the job site.
3. Tools. Repeated use of defective hand tools, power tools, extension cords etc.
4. Smoking in violation of the no-smoking policy.
5. Repeated traffic violations issued on the BNL site.

Reductions in award will be subtracted from final award amount for each period.

There will be no annual award regardless of rates if there is a fatality, loss of limb or an injury to the head resulting in permanent disability at the work site.

Determination of incentive award reductions will be made by the NSLS-II ES&H Manager.

(d) Final Award

The final award will be made on the basis of cumulative injury rates averaged over the time period of the conventional construction.

There will be no award if the average DART Rate or LWD rate for the Contractor including all sub-contractors working at the site over the duration of the project is greater than USDOE construction average for DART and LWD rate for the same time period

50% of the final award will be granted if the DART Rate and LWD rate for the Contractor and all sub-contractors working at the site over the duration of the project is less than or equal to USDOE construction average for DART and LWD rate for the same time period

Additional award is earned based on the percentage difference below the USDOE average LWD rate for the same time period, reaching 100% at 50% of the USDOE average LWD rate.

The following example is to illustrate the amount of annual and final award based on DOE 2007 DART and LWD rates using fictitious contractor data for hours, DART cases and LWD cases:

EXAMPLE Award Calculation over course of contract (Note this is based on first years DOE rates only these rates can go up or down in subsequent years)

DOE RATES (2007) DART = 0.6, (2005-2007 avg) LWD = 0.28 Rate = # of (DARTs or LWD cases) x 200,000/actual hours worked during the period						
	Hours worked in period includes all contractor and sub-tier	Number of DART Cases in period	Number of Lost Work Day Cases in period	DART RATE	LWD RATE	AWARD

	contractors					
First Period	600,000 (based on 300 workers @ 2000/yr)	1	0	.33	0	Full award ($500,000) both rates are below the trigger rates of .6 and .28 and LWD is below 50% of the DOE CAIRS rate
Second Period	600,000	1	2	.33	.66	No award.66 exceeded the DOE LWD rate of .28
Third Period	600,000	0	0	0	0	Full award ($500,000)
Final Award (total for all periods)	1,800,000 (3 yrs x 600,000/yr)	2	2	.22	.22	71% of total possible award ($357,142); both rates less than DOE average of 0.6 and 0.28 earning $250,000 plus additional award of $107,142 based on an LWD of .22 (from table 1)
						Total Project Award $1,357,142

(e) All actions by the Incentive Determination Official (IDO)/NSLS-II ES&H Manager shall not be subject to interpretation, dispute or legal claim and shall be the sole determination by the NSLS-II IDO.