

# **BROOKHAVEN NATIONAL LABORATORY**

**Internal Audit and Oversight Office**

**IO 09-07 Phase 2**

**National Synchrotron Light Source II**

**Construction Safety Program Review**

**Phase 2 - DRAFT**

**Factual Accuracy Review**

**October 21, 2009**

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**Edward J. Grove, Lead Assessor**  
**Internal Audit & Oversight**

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**Date**

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**Jean Odin-McCabe, Assessor**  
**Internal Audit & Oversight**

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**Date**

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**Approved by: Robert C. McNair, Interim Director**  
**Internal Audit & Oversight**

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**Date**

# TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1.0 BACKGROUND AND INTRODUCTION.....</b>	<b>2</b>
<b>2.0 PHASE 2 RESULTS .....</b>	<b>2</b>
<b>2.1 TORCON and BNL Safety Orientation Training for Sub-Contractors.....</b>	<b>2</b>
<b>2.2 Construction Safety Oversight.....</b>	<b>4</b>
<b>3.0 SUMMARY .....</b>	<b>6</b>
<b>4.0 REFERENCES.....</b>	<b>7</b>
<b>APPENDIX A: ASSESSMENT PLAN .....</b>	<b>8</b>
<b>APPENDIX B: TORCON Safety Orientation Class for New Sub Contractors.....</b>	<b>9</b>
<b>APPENDIX C: Topics Covered in Contractor/Vendor Environment, Safety &amp; Health Orientation.....</b>	<b>12</b>
<b>APPENDIX D: NSLS II Construction Safety Personnel.....</b>	<b>14</b>
<b>APPENDIX E: Construction Safety Personnel JTA Comparison .....</b>	<b>15</b>

**IO 09 -07 DRAFT – Factual Accuracy Review  
National Synchrotron Light Source II  
Construction Safety Program Review Phase 2**

**EXECUTIVE SUMMARY**

The Brookhaven National Laboratory's (BNL) National Synchrotron Light Source is a widely used scientific facility, hosting researchers from a wide assembly of universities, government laboratories, and private companies. To meet the scientific challenges for the energy future requires advanced capabilities. To meet these challenges, BNL has designed and is presently constructing the National Synchrotron Light Source II (NSLS II) which will be a state-of-the-art, medium energy electron storage ring which will deliver a world-leading beam (in intensity and brightness) and will produce x-rays 10,000 times brighter than the current NSLS.

Based on the size of the effort and the large number of workers who will be involved in the construction, it is essential that the overall construction safety program be sufficiently comprehensive to ensure the safety of all workers. Internal Audit & Oversight (IA&O) was requested by Senior Laboratory Management to review the adequacy and effectiveness of the Construction Safety Program for NSLS II. A three phase approach will be utilized by IA&O, with assistance from subject matter experts from Liberty Mutual Insurance Company, to accomplish this review. Phase 1 consisted of a document review of the NSLS II and TORCON construction safety documents; Phase 2 will review the training provided to all contract project personnel; and Phase 3 will involve field observations of work in progress at the site.

This report documents the results of the Phase 2 assessment. The assessors from IA&O and Liberty Mutual Insurance Company audited the training provided by TORCON and BNL. No major deficiencies with the training were identified from this review. The training material presented to the contractors covered all the information necessary for them to access the BNL site and work safely. Three Areas for Improvement were identified which, if implemented, would enhance some of the topics included in the training and increase worker safety.

Construction safety at the NSLS II is the responsibility of contractor and Laboratory personnel. The required training for the construction safety engineers was also reviewed to ensure it was commensurate with the areas which need to be inspected. Three additional Areas for Improvement were identified which would clearly identify these individuals in one succinct list, review the qualifications (training and experience) of contractor Competent Persons, and enhance the Job Training Assessments (JTAs) of the construction safety engineers.

This assessment supports two Strategic Focus Areas identified in the 2009 Annual Laboratory Plan, specifically Advancing the Frontiers of Science and Achieving Excellence in ESS&H.

**IO 09 -07**  
**Factual Accuracy Review**  
**National Synchrotron Light Source II**  
**Construction Safety Program Review Phase 2**

## **1.0 BACKGROUND AND INTRODUCTION**

Brookhaven National Laboratory's (BNL) current light source, the National Synchrotron Light Source (NSLS) is a widely used scientific facility, hosting numerous researchers from a wide assembly of universities, government laboratories and private companies. To meet the scientific challenges for the energy future requires advanced capabilities. To meet these challenges, BNL has designed and is presently constructing the National Synchrotron Light Source II (NSLS II). NSLS II will be a state-of-the-art, medium energy electron storage ring which will deliver a world-leading beam (in intensity and brightness) and will produce x-rays 10,000 times brighter than the current NSLS.

Based on the size of the NSLS II construction effort and, the large number of workers (BNL employees and contractors), it is essential that the overall construction safety program be sufficiently comprehensive and integrated to ensure the safety of all workers. Internal Audit & Oversight (IA&O) was requested by Senior Laboratory Management to review the adequacy and effectiveness of the Construction Safety Program for NSLS II. This will include a review of the NSLS II Project safety and control processes and requirements flow down to all subcontractors. A three phase effort will be utilized by IA&O and subject matter experts (SMEs) from Liberty Mutual Insurance Company to accomplish this review. Phase 1 (Reference 4. 1) consisted of a document review of NSLS II and TORCON construction safety documents; Phase 2 will consist of a review the training provided to all Project personnel, and Phase 3 will involve field observation(s) of work in progress at the site. The approved Assessment Plan for this effort is attached (Appendix A).

## **2.0 PHASE 2 RESULTS**

The Phase 2 effort involved the review of the training provided to all contract personnel before granting access the construction site. This training is provided jointly by TORCON and BNL daily. The assessors attended the TORCON Safety Orientation Class for New Sub-Contractors on Tuesday August 25, 2009 and the Contractor Vendor Orientation (CVO) Training on September 1, 2009. In addition, a SME from Liberty Mutual Insurance Company attended the training on September 10, 2009.

### **2.1 TORCON and BNL Safety Orientation Training for Sub-Contractors**

The TORCON training was provided by Mr. Ken Moon, TORCON Project Safety Manager. The class began with a showing of a generic TORCON created safety training video which is used at all of their work sites. This video conveyed standard work site expectations and

requirements. It was noted that there is a Spanish version of this training video also available if needed. Some of the topics briefly discussed were fall protection, personal protective equipment (PPE), excavation safety, scaffolds, lifting safety, housekeeping, compressed gas safety, lock out/tag out, chemical safety, fire safety, trip hazards, and prohibited items and actions (e.g., alcohol, drugs, etc.).

Following the video, Mr. Moon discussed safety policies and procedures as it pertains to the NSLS-II. A copy of TORCON's safety handbook which included a registration form was provided. A sticker signifying completion was provided to be affixed to the worker's hardhat. Following a brief overview of the NSLS-II, Mr. Moon discussed the phase hazard analyses (what they are and responsibility of each worker to read and understand those applicable to their work), the goal of TORCON to achieve DOE STAR status, required Personal Protective Equipment (PPE) (i.e., hard hat, safety glasses, work shoes, gloves, no shorts or cut off sleeves, and reflective vests). The OSHA 10 or 30 hour class is required pre-requisite training for all workers. A detailed list of topics discussed during this training is included in Appendix B.

Following the TORCON training, the sub-contractors complete the CVO training. On Tuesdays and Thursdays, this class is given by Mr. Ken Krasner of the NSLS-II staff. This training is also supplemented by a video presentation. On the remaining days, the training is provided by the BNL Training group. The two classes offer the same material (Course HP-Q-006 Contractor/Vendor Environment, Safety, & Health Orientation). Completion of this training is required for contractors to be issued a BNL ID badge. Mr. Krasner briefly discussed the five principles of Integrated Safety Management. It was explained to the attendees that the Laboratory follows OSHA rules but that OSHA has no jurisdiction on site. Important phone numbers related to the NSLS-II construction were provided. The importance of environmental protection was stressed including reporting of all releases to the environment (no matter the size). The function of the Laboratory protective forces was discussed (i.e., Police, Fire-Rescue). During the class discussions, Mr. Krasner interlaced the topics with lessons learned from past occurrences to stress the importance and significance of the training. Emergency procedures (e.g., shelter in place and site evacuation) were discussed. A detailed list of topics discussed during this training is included in Appendix C.

Subsequent to the IA&O assessment, the Quality Management Office conducted an assessment of the NSLS II project training requirements on August 10-11, 2009 (Ref. 4.2). This assessment consisted of a review of TORCON's policies on safety and a review of personnel safety training and qualifications. The assessment identified no major nonconformances, one minor nonconformance, and one Opportunity for Improvement. The minor nonconformance found that TORCON was not able to document that all workers were fully trained (e.g., completion of the OSHA 10 or 30 hour course on construction safety). The Opportunity for Improvement suggested that TORCON consolidate all necessary training records on site.

Based upon this Phase 2 review, the assessors identified no deficiencies with the training provided. The combination of the TORCON and BNL training segments provided a solid foundation of the expectations and requirements applicable to new contractors working at the NSLS II construction site.

While observing the training, several areas were identified by the assessors which might be considered as points for additional clarification or future improvements.

**Area for Improvement No. 1:** Provide a laminated card to contractors with the important phone numbers they may need while on site. The orientation training identified these numbers, but the assessors are concerned that individuals may not remember all the phone numbers. A laminated card could be maintained with the individual's identification badge. (Management System: Training and Qualifications)

**Area for Improvement No. 2:** Review and clarify, as needed, the information pertaining to the following points presented during contractor training:

- a. The role of the construction Emergency Medical Technician (EMT) with respect to the onsite Fire-Rescue. The information presented during the contractor orientation training was confusing as to the policy regarding when the on-site EMT should be called versus the Fire-Rescue Group,
- b. The requirements with respect to the vehicle radiation monitoring station. This topic was briefly mentioned. However, from the questions raised during the class it was observed that some of the contractors were not clear as to when and which vehicles were required to go through this monitoring station,
- c. Clarify which amenities are available to be used by contractors on site. The training mentioned some of the on-site amenities such as the Occupational Medical Clinic, pool, bank, post office, etc. However, it was not clear which services and amenities are available for use by the contractor employees,
- d. Clarify where contractors will have access to computers. The training included a discussion of Standard Based Management System (SBMS) and it was stated that this is the central reference point for any safety related policy or requirement. However, the training did not include where available networked computers are available for access to the SBMS, and
- e. Update the CVO training video. This training video is a valuable adjunct to the training, but it is outdated (e.g., incorrect references to SMEs, facilities no longer on site, etc.) with respect to the current facility. (Management System: Training and Qualifications)

**Area for Improvement No. 3:** If lanyards are used by contractors require the use of break-away lanyards. The training stressed the benefits of these lanyards (i.e., in the event the lanyard becomes entangled in rotating machinery), however there is no requirement regarding their use. (Management System: Worker Safety and Health)

## **2.2 Construction Safety Oversight**

A team approach is used to provide field construction oversight of the NSLS-II construction activities. The NSLS-II construction safety engineers along with designated contractor personnel provide daily oversight. Additional oversight (on a less frequent basis) is provided by DOE-BHSO and BNLs Safety & Health Services (S&HS) Division. Specific SME's are provided by Facility & Operations (crane safety and hoisting and rigging), S&HS (electrical safety, industrial hygiene, and radiation protection), and the Laboratory Protection Division (fire safety). A listing of the individuals currently responsible for this oversight is provided in Appendix D. As the

construction progresses OSHA Competent Persons are also required to provide oversight. As defined by OSHA (29 CFR 1926.32(f)), this person is “*one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.*” By way of training and/or experience, the Competent Person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation (e.g., excavation), and has the authority to correct them. Some standards (i.e., 1926 K Electrical, Subpart I Scaffolds, and Subpart P Excavations) add additional specific requirements which must be met by the Competent Person. Competent Persons for this construction effort are identified to the Laboratory by the applicable contractors and sub-contractors. Both NSLS II Construction Safety Engineers have been designated as Competent Persons. In addition the contractor has also designated their Competent Persons. Discussions with a NSLS II construction safety engineer indicate that to their knowledge no review of the training and experience of the contractor Competent Persons have been done. It is recommended that a review be performed to confirm that these individuals meet the qualifications of a Competent Person.

**Area for Improvement No. 4:** Review the qualifications of the individuals designated by the contractor to be Competent Persons for the NSLS II construction effort. (Management System: Worker Safety and Health)

In assembling the information included in Appendix D, the assessors reviewed applicable SBMS subject areas and support organization’s organizational charts in an attempt to identify the individuals responsible for NSLS II construction oversight. While available from different sources, it would be advantageous to assemble this information in one succinct document and provide it to all NSLS II project personnel and contractors during the training program discussed in the previous section.

**Area for Improvement No. 5:** Prepare a succinct list of the individuals responsible for construction oversight and make it readily available to all NSLS II project personnel and contractors. (Management System: Worker Safety and Health)

As discussed above, responsibility for construction safety oversight is provided primarily by the NSLS II and S&HS construction safety engineers. To assure that the responsibilities and training for these individuals is commensurate with the job site risks and required training, the applicable JTAs (i.e., LT-04S NSLS II Construction Safety Engineer and HP-06D Industrial Safety-Construction Safety Engineer) were reviewed (Appendix E). The purpose of the review was to identify differences between the two. The JTAs were also compared with those of other construction safety individuals from Plant Engineering (EP-138 and 791). Section 3 of the SBMS Construction Safety Subject Area defines the responsibilities of persons inspecting construction sites and also includes a construction safety checklist which guides them in areas to be inspected. Some differences between all the JTAs are expected and understandable. In reviewing the JTAs, the assessors identified several additional training courses, associated with hazards applicable to the construction site, which were not included in the JTAs. These include compressed gas safety and fire extinguisher safety. In reviewing the training records of the NSLS II and the S&HS construction safety engineers, it was noted that in most cases these

additional training courses were completed even though they were not required on the JTA. The additional training courses identified should be included in the JTAs since they represent areas required to be inspected. Individuals may not necessarily be notified of revisions to training courses that are not required on their JTAs. In addition, if new staff is linked to these existing JTAs, there is no assurance that they will have completed all the required training classes if not specifically reflected on the JTAs. The R2A2 (Roles, Responsibilities, Accountabilities, and Authorities) for the NSLS II Construction Safety Engineers was also reviewed and found that it identified the pertinent roles, responsibilities, and authorities for these individuals.

**Area for Improvement No. 6:** Ensure that the training courses identified for the NSLS II Construction Safety Engineers LT-04S is inclusive of all the risks which can be encountered on the NSLS II construction site (e.g., fire extinguisher safety and compressed gas safety) (Management Systems: Training and Qualification and Worker Safety and Health)

### **3.0 SUMMARY**

This review focused on the TORCON and BNL training provided to the subcontractors. In addition a review was made of the training required for the construction safety engineers (both NSLS II and S&HS) to ensure it was complete with respect to their duties and the hazards which exist on the construction site.

The primary goal of the combined TORCON and BNL training provided to contractors before they are granted access to the NSLS-II construction site is to clearly inform them of the requirements for working on this site. The combined training was found to accomplish this goal. No major deficiencies were identified with respect to the training. Three Areas for Improvement were identified which, if implemented, would clarify some of the topics included in the training and increase worker safety.

Three additional Areas for Improvement were identified relating to subject matter experts which, if implemented, would enhance the NSLS II safety program. The role of ensuring construction safety on the NSLS II site is a team effort between the BNL construction safety engineers (NSLS II and S&HS), TORCON, BHSO, task-specific SMEs and Competent Persons. An Area for Improvement was identified to prepare a succinct list of these individuals to more readily identify them if needed. The NSLS II and the S&HS Construction Safety Engineers are primarily responsible for the daily oversight inspections of the NSLS II construction site. The JTAs and training history were reviewed to ensure that the training required for these individuals was complete with respect to their responsibilities and hazards which could be encountered on the construction site. An Area for Improvement was identified to add additional training to the JTAs such that it completely envelopes the areas of responsibility and potential hazards present on the construction site. In addition to the construction safety engineers, specific individuals are identified by both BNL and the contractor to be OSHA Competent Persons. An Area for Improvement was identified to review the qualifications (both training and/or experience) to ensure their qualifications are adequate to serve in this capacity.

## **4.0 REFERENCES**

- 4.1 Brookhaven National Laboratory Internal Audit and Oversight Office, IO 09-07 Phase 1 “National Synchrotron Light Source II Construction Safety Program Review Phase 1”, August 29, 2009
- 4.2 Brookhaven National Laboratory Quality Management Office, “Assessment of Brookhaven National Laboratory, National Synchrotron Light Source II Project Training Requirement-Final Report,” September 2, 2009.

# APPENDIX A

## Independent Assessment Plan

IO 09-07

### National Synchrotron Light Source II – Construction Safety Program Review

**Purpose:**

To evaluate the adequacy and effectiveness of National Synchrotron Light Source (NSLS) II Construction Safety Program. This will include review of the safety and control process in the NSLS-II Project using the assessment tools developed by BNL and the flow down of requirements to subcontractors. To observe and evaluate conformance to BNL SBMS requirements, NSLS-II procedures, NSLS-II Project Safety, Health and Environmental Program, and the contractor's Health and Safety Program (HASP).

**Conduct of Assessment:**

IA&O will establish a team consisting of the Internal Audit & Oversight (IA&O) Director and Manager, IA&O Assessors and Subject Matter Experts in Construction Safety from BNL/Environment Safety & Health Directorate and / or Liberty Mutual to assist in each phase of the assessment.

**Scope:**

The evaluation will be implemented in three phases and each phase will generate reports that encompass the following elements:

**Phase 1:**

- Review SBMS Construction Safety Subject Area.
- Review NSLS-II procedures for conformance to SBMS construction safety requirements.
- Determine adequacy of flow down of DOE/BNL requirements to the contractor and subcontractor.
- Review process used for developing and issuing call for proposal and contractor selection
- Review process for consideration of contractor's previous performance in bid award.
- Review and comment on the contractor's HASP and Safety Program, Health and Environmental Program

**Phase 2:**

- Observe training provided to contractors.
- Observe toolbox and/or tailgate meetings.
- Review R2A2 and involvement of the OSHA "Competent Person" (i.e., excavation, scaffolding, electrical, etc) including the contractor's.
- Review interface / relationship between contractor, subcontractors and BNL for ongoing safe and efficient deployment of the project.
- Review the construction safety interface / relationship between the NSLS-II Project staff with F&O and Safety and Health Services.

**Phase 3:**

- Observe work-in-progress to verify compliance with the contractor's HASP and Safety, Health and Environmental Program.
- Schedule work observations by senior management



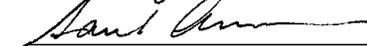
Prepared by: Robert C. McNair  
Manager, Internal Audit & Oversight



Reviewed by: Mark Israel  
Director, Internal Audit & Oversight



Reviewed by: Edward J. Grove  
Lead Assessor, Internal Audit & Oversight



Approved by: Samuel Aronson  
Laboratory Director

## APPENDIX B

TORCON Safety Orientation Class for New Sub Contractors

Tuesday August 25, 2009 7AM to 8:30AM

Observers: Edward Grove and Jean Odin-McCabe

1. Normally this class is offered every Tues/Thurs in conjunction with BNL Contractor Orientation training which is given by Mr. Ken Krasner.
2. Mr. Tom Moon, TORCON Safety Manager, facilitated this training class. The Project EMT also sat in for most of the class. Mr. Moon noted that in the future he hopes to have the Project EMT assist him in providing the classes.
3. The class began with the viewing of a generic TORCON safety training video detailing TORCON's expectations and requirements generic to all of their construction sites. It was noted that this video is also available in Spanish as well. Items briefly discussed in video included:
  - a. Fall protection
  - b. PPE
  - c. Excavation Safety
  - d. Scaffolds (Red Tag-in progress do not use, green tag: OK to use, Yellow Tag: Use caution)
  - e. Floor coverings
  - f. Lift safety
  - g. Housekeeping
  - h. Compressed gas safety
  - i. LOTO
  - j. Chemical safety and MSDS
  - k. Fire safety
  - l. Confined space safety
  - m. Trip hazards
  - n. Prohibited items and actions
4. Following the video, Mr. Moon discussed TORCON's safety policy and requirements as it pertained to this Project. A copy of the TORCON safety handbook was provided to the student, and he completed the registration on the back. He received a sticker to affix to his hardhat certifying he took the training. Topics discussed by Mr. Moon included:
  - a. Overview of NSLS-II
  - b. Phase Hazard Analysis (PHAs)(AKA Task Hazard Analysis)
    - i. What they are
    - ii. TORCON prefers short to the point PHAs
    - iii. Ensures work is planned properly, required 48 hrs prior to work start
    - iv. Before beginning work, workers should see it, read it, understand it, and then sign off. Mr. Moon emphasized the importance in signing off and that by signing the individual is verifying that they understand all the information provided and their responsibilities to perform the work.

- c. DOE VPP
  - i. Goal is to become a DOE STAR site
  - ii. Takes about 18 months to apply
- d. PPE
  - i. Essential PPE for site (hard hats, safety glasses, work boots with toe protection, gloves, reflective vest or bright tee shirt in summer)
  - ii. No shorts or cut off sleeves
  - iii. PPE is meant to be worn in the approved manner (no safety glasses on top of hard hat)
- e. Other Safety Rules
  - i. Required training: OSHA 10 or 30 hr course
  - ii. Fall Protection required above 6 feet (no exceptions) and within 6 feet of a roofing or open edge
  - iii. Hot Work: 20 lb ABC fire extinguisher required
- f. Discipline program
  - i. Safety Concern Form
  - ii. Safety Violation Form
    - 1. Second time requires a meeting and retraining
    - 2. Third notice is removal from site
- g. Safety on Site
  - i. Many safety inspections; should not be feared. Discussed BNLs SME inspectors (i.e., IH SMEs)
  - ii. Safety Award program (Gift cards are used as recognition of good safety awareness)
  - iii. Weekly safety meeting held with representatives of all the trades. These individuals will bring issues from workers to this meeting if needed
- h. Housekeeping, Recycling, Smoking Areas
  - i. Currently smoking is permitted on job site. As more workers arrive and more combustibles are added to the work site there will be designated areas
- i. Lessons Learned
  - i. Reviewed the 1 DART case where worker stepped off step ladder and fractured heel
- j. Health Requirements
  - i. Drug Testing, will be done on site in 1-2 weeks
  - ii. Occupational Medicine –Physicals required for workers on site greater than 30 days
  - iii. Hearing Protection: required if working continuously (walking past operating HEMO does not require protection) within 30 feet of heavy equipment in operation
  - iv. Heat Stress warnings
    - 1. What they are
    - 2. How workers are made aware of them
    - 3. Breaks given depending on strenuous level of work
- k. Emergency procedures

- i. On site Fire Department and Ambulance, Fire Department maintains KUMATO vehicle
- ii. All workers are provided with BNL emergency number 344-2222.
- iii. Project EMT. Workers can come to his office for treatment if needed or he can come to workers location on job site
- iv. Workers will get sticker for hard hat with EMT phone number
- v. Emergency Evacuations
  1. Shelter in place will be CFN Bldg 725
  2. Trailer area is assembly area. As worksite becomes more congested then a north assembly area will be added and then finally east and west areas will be added.
  3. Site Sirens will be reviewed in BNL training for contractors
1. Feedback always welcome, Can always contact TORCON Rep, Tom Moon

## APPENDIX C

### Topics Covered in Contractor/Vendor Environment, Safety & Health Orientation

September 1, 2009

Observer: Edward Grove

1. Training was provided by Mr. Ken Krasner.
2. At the beginning of the class Mr. Krasner requested the attendees to complete an attendance sheet and a form for them to get their ID badges
3. Mr. Krasner began the class by telling the contractors that though they may have prior experience with OSHA on other job sites, BNL follows OSHA rules but they have no jurisdiction
4. Mr. Krasner explained that his main job is to make sure everyone leaves the job site safely every day
5. The five principles of ISM were briefly discussed. Mr. Krasner explained this is really not a hard concept and that they probably are already doing these things while not realizing it is ISM
  - a. Mr. Krasner explained SBMS and told them how to access it from a computer.
  - b. The Contractor/Vendor Environment, Safety, & Health Orientation (Course HP-Q-006) was handed out. One of the first thing in this booklet was the important phone numbers related to this project.
6. Mr. Krasner provided the list of worker responsibilities while working on the project and told them of the discipline and enforcement procedures. He reiterated that this is a government site and not to think workers can remove things from the site.
7. Lab evacuation procedures were discussed including the different site sirens and that they are tested at noon every Monday. Mr. Krasner explained to them that for right now CFN will serve as an indoor assembly area until construction progresses further.
8. Traffic safety including the role the BNL Police play in enforcing the rules on site
9. Caution with respect to any munitions that might be found was discussed
  - a. Mr. Krasner supplemented his talk with a video tape on safety procedures here on site.
10. The importance of environmental protection was stressed and the workers were told to be careful and report all spills to the environment no matter how minor.
11. Radiation safety was briefly discussed. It was clear that other than some soil density measuring and NDT later, there will be no radiation on the NSLS II construction site. Mr. Krasner stressed that this training does not provide the right to enter a radiation area and that all barriers and ropes and signs posted for radiation should not be disturbed.
12. Burn permits was discussed and it was mentioned that BNL is presently looking at the TORCON program and until this areas is approved all permits are issued by the BNL Fire Group. The importance was discussed and the recent Throgs Neck Bridge fire was used as an example.
13. Electrical safety was discussed. Items discussed were safe use of extension cords, LOTO, and GFCIs. It was stated that any taps to existing BNL utilities would be done by BNL and a 48 hr notice would be required,
14. The Stop Work procedure was discussed and how it is to be implemented and what their response should be in the event someone tells them to stop work

- a. What to do in the event of accidents and injuries was discussed. The contractors were told that an EMT will be on the site whenever they are working.
  - b. Examples of historical BNL accidents was given as well as the one accident on the construction site so far
15. PPE: It was clearly stated that the PPE on the site will always be at a minimum hard hats, safety shoes, a reflective shirt or vest, long pants, shirts with sleeves and safety glasses. Other PPE such as hearing protection will be provided as needed. The contractors were told this was for their safety and they must be worn
  16. Crane Safety was discussed
  17. Confined space was briefly discussed. Any training if needed can be provided by BNL at a later date
  18. Safety related to excavation and trenching was discussed
  19. Heat stress and other environmental issues were discussed. The process by which BNL declares a heat stress alert and how this is disseminated to the workers was discussed, and what is to be done during such an alert.
  20. Mr. Krasner used a site map to point out several important buildings the contractors will need to be aware of. These included the RSB, OMC, points of ingress and egress, etc.
  21. The use of the Radiation monitoring station for trucks was briefly discussed
  22. Site closings due to snow were discussed and the process to notify employees was mentioned
  23. It was stressed to the contractors the importance of wearing their badges and how they should be displayed. While it is best to have it clearly seen between the neck and torso area, if that is not possible they must have it on their person. The benefit of a break- away lanyard was also discussed. The upcoming DOE security review was also mentioned.

## Appendix D NSLS II Construction Safety Personnel

### **NSLS II ES&H Manager**

Steve Hoey

### **Construction Safety Engineers NSLS II**

Ken Krasner

Townsend Anshutz

### **Construction Safety S&HS**

Tom Conrad

### **Construction Safety TORCON**

Tom Moon

### **Construction Safety BHSO**

Chris Seniuk

### **BNL Subject Matter Experts**

Hoisting/Rigging and Crane Safety-John Hynan

Electrical Safety – Jim Durnan

Industrial Hygiene – John Peters and Chris Weilandics

Radiological Protection - Frank Zafonte

Fire Engineering - Mike Kretschmann

### **OSHA Competent Persons**

Designated Brookhaven National Laboratory and Contractor personnel

## Appendix E

### Construction Safety Personnel – JTA Comparison

	Plant Engineering EP-138 E&CS Construction Inspector	Plant Engineering EP-791 Safety Inspector	Safety & Health Services HP-06D Industrial Safety-Construction Safety Engineer	NSLS II LT-04S Construction Safety Engineer	NSLS II LT-06 Construction Oversight Field Inspector
OSHA 29CFR1926 Construction Standards 10 Hr EP- 0366A	X	X		Equivalent Course	Equivalent Course
OSHA Trenching and Excavation Competent Person EP-0367	X				
Asbestos Awareness EP-AS004	X	X			
F&O Electrical Safety Annual Review & Permits EP-E0005	X	X			
Scaffold Safety Awareness EP-SF009	X	Equivalent Course	Equivalent Course		
Hazard Communication HP-IND-200	X	X	X	X	X
Welding, Cutting & Brazing HP-OSH-006	X				
Confined Space Entry HP-OSH-016	X	X	X	X	X
LOTO Authorized HP-OSH-151B-W	X	X		X	X

	Plant Engineering EP-138 E&CS Construction Inspector	Plant Engineering EP-791 Safety Inspector	Safety & Health Services HP-06D Industrial Safety-Construction Safety Engineer	NSLS II LT-04S Construction Safety Engineer	NSLS II LT-06 Construction Oversight Field Inspector
Rad Worker 1 HP-RWT002	X	X	X		
Electrical Safety 1 TQ-ELECSAF1	X	X	X	X	X
Lyme Disease & Tick/Chigger Bite Prevention TQ-LYME1	X	X		X	X
Noise and Hearing Conservation TQ-NOISE	X	X		X	X
C-AD Access Training AD-CA-ACCESS		X			
OSHA Trenching and Excavation 'Awareness' EP-0212	Equivalent Course	X			
Construction Industry Outreach training- 10 Hr EP-OSH157		X			
Atmosphere Monitor Equip Training – RKI GX-2001 EP-RKI-GX2001		X			
Scaffold Awareness training GE-SCAFFOLD		X	X	X	X
Confined Space Atmosphere Testing TQ- CONSPACETESTER		X			
Fire Extinguisher Safety TQ-FIRE-EXT		X			

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Basic Rigging-Initial Course TQ-RIG-C		X	X		
Static Magnetic Fields TQ-SMF		X			
Contractor/Vendor Orientation Training HP-Q-006			X		
Overhead Crane Operator HP-Q-0101-W			X		
Compressed Gas Safety TQ-COMPGAS1			X		
Fall Protection Competent Person TQ-FALLPROTECT-C			X		
Ladder Safety TQ-LADDER			X	X	X
Rigging & Crane Practical TQ-RIG-P			X		
Hand and Power Tool Safety TQ-TOOLS SAFE			X	X	
Fall Protection GE-FALLPROTECT				X	X
Noise Medical Surveillance OM-MEDSURV- NOISE				X	X
Suspect Parts/Counterfeit Items Overview QA-SCI-3A				X	X

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Back Safety TQ-BACKSAFE				X	X
10 Hr OSHA Construction Safety TQ- CONSTRUCTION2				X	X
Environmental Management System ISO 14001 Overview TQ-EMSS-1				X	
Heat Stress Prevention TQ-HEATSTRESS				X	X
ISM at BNL TQ-ISM				X	
OSHA Compliance Inspection Training TQ-OSHAAUDIT				X	
Work Planning & Control for Site Infrastructure, Maintenance & Operations TQ-WORKPLAN-MO				X	X