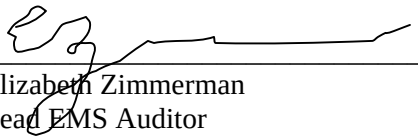
FINAL REPORT
Brookhaven National Laboratory
February 2007

ISO 14001:2004 ENVIRONMENTAL MANAGEMENT SYSTEM and OHSAS 18001:1999 OCCUPATIONAL SAFETY & HEALTH

INTERNAL AUDIT
[Rev. 0, 03/13/07]

Prepared by:



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FINAL EXECUTIVE SUMMARY
BNL EMS AND OHSAS INTERNAL AUDIT
FEBRUARY 2007
[Rev. 0, 03/11/07]

PURPOSE

The purpose of this audit was to determine whether the Brookhaven National Laboratory (BNL) Environmental Management System (EMS) and Occupational Health and Safety Assessment Series (OHSAS) Management System at Upton, New York conform to the:

- ISO 14001:2004 standard, *Environmental Management Systems—Specification with guidance for use* and
- OHSAS 18001:1999, *Occupational health and safety management systems — Specification.*

For the elements that were within the scope of this assessment, the audit evaluated corrective actions associated with the most recent previous internal and external EMS and OHSAS assessments.

SCOPE AND APPROACH

The ISO 14001:2004 EMS and 18001:1999 OHSAS standards consist of 18 elements that address policy, planning, implementation, checking and corrective action, and management review. A team of two qualified, independent auditors from Pacific Northwest National Laboratory and Oak Ridge National Laboratory audited the design, implementation, maintenance, and effectiveness of the BNL EMS. Two other qualified, internal auditors from BNL's Safety & Health Services Division audited the OHSAS system. The evaluation focused on the requirements associated with nine elements of the standards. At the request of Facilities & Operations (F&O), an additional three elements were audited within their organization.

During the course of this assessment, a representative sampling of more than 99 managers, supervisors, staff, visiting scientists and contractors were interviewed to enable a comprehensive, independent, and objective assessment of the conformance of the EMS and OHSAS to the requirements. The effectiveness of implementation was also assessed. Approximately 135 EMS documents and 145 OHSAS documents were reviewed. The document review and onsite audit concluded on February 9, 2007, and a preliminary briefing on findings was provided on that date.

GENERAL CONCLUSIONS

EMS: Overall the system, which has been in place since 2001, meets the intent of the standard, is well established, and appears to be strong and comprehensive. It is being maintained and there is clear evidence of continual improvement. As expected, there is additional room for improvement.

For the EMS elements audited, no Major Nonconformities were identified. There were two Minor Nonconformities in the elements of Management Review, and Records; 20 Opportunities for Improvement, and 7 Noteworthy Practices specific to the EMS.

OHSAS: The OHSAS 18001 program, which is newer and has been in place site wide for less than a full year, is behind the EMS in terms of incorporation into work planning processes of line organizations. At this stage, OHSAS 18001 is not fully integrated into the OSH program of many site level programs and line organizations. However, the OHSAS/ISM program elements are in place and are maturing. Improvements were very apparent in many areas.

OHSAS 18001, at the institutional level, is not adequately resourced to ensure that site program elements are sustained and improved. Line organizations generally have satisfactory OSH resources in place for compliance. Some safety and health issues and initiatives (e.g. Nationally Recognized Testing Laboratory certification of electrical equipment, Industrial Hygiene exposure monitoring, material handling, NFPA arc flash calculations, NFPA 70 and building fire protection and detection) are in a crisis management mode, with needs exceeding the financial and personnel resources to correct known deficiencies. The funding for these OSH priorities in the budgeting process is not fully coordinated.

For the OHSAS elements audited, no Major Nonconformities were identified, but there were two Minor Nonconformities in the elements of Hazard & Risk Assessment and Structure and Responsibility; 19 Opportunities for Improvement; and 12 Noteworthy Practices specific to the OHSAS.

In addition, there were a number of **findings that applied to both the EMS and OHSAS systems**: 15 Opportunities for Improvement, and 18 Noteworthy Practices. While conducting a combined EMS/OHSAS audit posted some challenges, there were clearly many areas of overlap between the two systems.

For additional details, please refer to the full report, which contains:

- Attachment A: Summary of Audit Findings (along with approach, recommended assessment areas for future audits, and recommendations regarding future combined EMS and OHSAS audits)
- Attachment B : Table showing distribution of EMS and OHSAS Audit Findings, by element
- Attachment C-1: ISO 14001 Checklist, detailing determinations of conformance, and listing documents reviewed
- Attachment C-2: OHSAS 18001 Checklist, detailing determinations of conformance, and listing documents reviewed
- Attachment D: List of individuals interviewed, and attendance at opening and closing meetings
- Attachment E: EMS Audit plan

ATTACHMENTS: LIST

- Attachment A: Summary of Audit Findings (along with approach, recommended assessment areas for future audits, and recommendations regarding combined EMS and OHSAS audits)
- Attachment B: Table showing distribution of EMS and OHSAS Audit Findings, by element
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- Attachment D: List of individuals interviewed, and attendance at opening and closing meetings
- Attachment E: EMS Audit plan

ATTACHMENT A: SUMMARY OF AUDIT FINDINGS

Organization of this report: Purpose, Scope and Approach, General Conclusions, Definitions, Discussion with Summary of Findings (by element), Areas Suggested for Further Inquiry in Future Audits, and Recommendations Regarding Future Combined EMS and OHSAS Audits.

The tables found in Attachment B shows the distribution of findings from the EMS and OHSAS portions of this combined audit, by element of the Standards.

Detailed checklists found in Attachments C-1 (EMS) and C-2 (OHSAS) describe determinations of conformance, and list documents reviewed. Attachment D lists the individuals interviewed, and attendance at the opening and closing meetings. Attachment E contains the EMS Audit Plan.

1. PURPOSE

The purpose of this audit was to determine whether the Brookhaven National Laboratory (BNL) Environmental Management System (EMS) and Occupational Health and Safety Assessment Series (OHSAS) Management System at Upton, New York conform to the:

- ISO 14001:2004 standard, *Environmental Management Systems—Specification with guidance for use* and
- OHSAS 18001:1999, *Occupational health and safety management systems — Specification.*

For the elements that were within the scope of this assessment, the audit evaluated corrective actions associated with the previous internal EMS assessment (04/11/06 report), internal OHSAS Audits (4/28/06 report and 11/27/06 report) and the most recent external EMS and OHSAS assessment (conducted in June 2006 by NSF-ISR).

2. SCOPE AND APPROACH

EMS: The ISO 14001:2004 standard consists of 18 elements that address environmental policy, planning, implementation, checking and corrective action, and management review. A team of two qualified, independent auditors from Pacific Northwest National Laboratory and Oak Ridge National Laboratory audited the design, implementation, maintenance, and effectiveness of the BNL EMS against the requirements associated with nine elements: General Requirements, Environmental policy, Environmental aspects, Legal & other requirements, Objectives, targets & programmes, Resources, roles, responsibility and authority, Competence, training & awareness, Documentation, and Management review.

At the request of Facilities & Operations (F&O), three additional EMS elements were audited within their organization: Communication, Records Management, and Evaluation of Compliance. Issues were also noted under Control of Documents. These elements are identified as "partial evaluations" because conformance with all requirements of the element at the Institutional level was not assessed.

A copy of the EMS audit plan, which lists the auditors' EMS auditing qualifications, is found in Attachment E.

OHSAS: The OHSAS specification consists of 18 elements that address policy, planning, implementation, checking and corrective action, and management review. A team of two qualified, internal auditors from BNL's Safety & Health Services Division audited the design, implementation, maintenance, and effectiveness of the BNL OHSAS against the requirements of 7 elements: 4.2 OSH Policy; 4.3.1 Planning for Hazard Identification, Risk Assessments and Risk Control; 4.3.2 Legal & Other

Requirements; 4.3.3 Objectives; 4.4.1 Structure & Responsibility; 4.4.2 Training, Awareness and Competence; and 4.6 Management Review.

The auditors were trained by Lloyd's Register Quality Assurance in OHSAS 18001 Internal Auditor & Foundation Training in July 2005 and have previously conducted internal audits at BNL.

Interviews and Document Reviews: During the course of this assessment, a representative sampling of managers, supervisors, staff, visiting scientists and contractors were interviewed to enable a comprehensive, independent, and objective assessment of the conformance of the EMS and OHSAS to the requirements. The effectiveness of implementation was also assessed. More than 99 individuals (refer to list in Attachment D) were interviewed from BES, C-AD/SMD, EENS, ER, ESH&Q, F&O, Institutional Program (HR, Training, SBMS), Instrumentation, Life Sciences (Medical & Biology), NSLS, Physics. Walkthroughs were conducted in a number of buildings, including the Animal Control Facility, Safeguards & Security, Sewage Treatment Plant, Water Treatment Plant, 120, 130, 460, 462, 480, 510, 535, 555, 701, 703, 725, 860, 911, Research Support Building, etc. The document review began on January 30, 2007. Approximately 135 EMS documents and 145 OHSAS documents were reviewed. These documents are listed on the checklists found in Attachments C-1 and C-2.

The document review and onsite audit concluded on February 9, 2007. A preliminary briefing on findings was provided on that date. Attendance at that briefing is listed in Attachment D.

3. GENERAL CONCLUSIONS

EMS: Overall the system, which has been in place since 2001, meets the intent of the standard, is well established, and appears to be strong and comprehensive. It is being maintained and there is clear evidence of continual improvement. As expected, there is additional room for improvement. During the assessment, the auditors noted some things (e.g., spills, inconsistent recycling, unoccupied offices that were lit) that, taken together, may indicate a general opportunity to increase awareness and affect changes to the "culture," and attitude of BNL staff. However, it should be noted that this attitude does not appear to be generally translated into sloppy environmental performance.

OHSAS: The OHSAS 18001 program, a newer program in place site wide for less than a full year, is behind the EMS in development and incorporation into work planning processes of line organizations. At this stage, OHSAS 18001 is not fully integrated into the OSH program of many site level programs and line organizations. However, the OHSAS/ISM program elements are in place and are maturing. Improvements were very apparent in many areas. OHSAS 18001, at the institutional level, is not adequately resourced to ensure the site program elements are sustained and improved. Line organizations generally have satisfactory OSH resources in place for compliance. Some safety and health issues and initiatives (e.g. Nationally Recognized Testing Laboratory certification of electrical equipment, Industrial Hygiene exposure monitoring, material handling, NFPA arc flash calculations, NFPA 70 and building fire protection and detection) are in a crisis management mode with needs exceeding the financial and personnel resources to correct the known deficiencies. The funding for these OSH priorities in the budgeting process is not fully coordinated.

EMS: For the elements audited, there were:

- No Major Nonconformities
- 2 Minor Nonconformities in Records and Management Review
- 20 Opportunities for Improvement
- 7 Noteworthy Practices

OHSAS: For the elements audited:

- 0 Major Nonconformities
- 2 Minor Nonconformities in Hazard and Risk Assessment and Structure and Responsibility
- 19 Opportunities for Improvement
- 12 Noteworthy Practices

In addition, there were a number of findings that applied to both the EMS and OHSAS systems:

- 15 Opportunities for Improvement, and
- 18 Noteworthy Practices.

4. DEFINITIONS

- **Major Nonconformities** occur when a system element is missing or there is evidence that it is not implemented or is not effective.
- **Minor Nonconformities** occur when there are observed discrepancies in the system, even though the overall system is defined, implemented, and effective. Multiple minor nonconformities in one EMS system element can constitute a Major nonconformity, i.e., indicating that the system element is not effectively defined and/or implemented.
- **Opportunities for Improvement** are suggestions to improve the efficiency or effectiveness of the EMS. Some are considered issues that could lead to nonconformities if they were not addressed.
- **Noteworthy Practices** indicate performance that exceeds expectations in terms of efficiency and/or effectiveness, and provides a model for others to follow.

5. DISCUSSION

The following is a **summary** of the Nonconformities, Opportunities for Improvement, and Noteworthy Practices identified during this assessment. A **detailed** discussion of findings, status if available, and the basis for determining conformity of the elements audited are presented in the checklists found in Attachments C-1 (EMS) and C-2 (OHSAS).

6. SUMMARY OF FINDINGS BY ELEMENT

NOTE: Findings NOT discussed during the closing meeting on February 9, 2006 are highlighted in gray. An (E) before a finding indicates that the finding is related to the EMS. An (S) indicates the finding is related to the OHSAS. An (E and S) indicates the finding is relevant to both systems.

A. GENERAL REQUIREMENTS

EMS: Overall the system, which has been in place since 2001, meets the intent of the standard, is well established, and appears to be strong and comprehensive. It is being maintained and there is clear evidence of continual improvement. As expected, there is additional room for improvement.

OPPORTUNITIES FOR IMPROVEMENT:

- (E) During the onsite portion of the assessment, the auditors noted some "little things" (e.g., documents not double-sided, two releases from vehicles, lack of energy conservation, inconsistent recycling, litter, people not wearing badges). Taken together, these may indicate an opportunity to

increase awareness and affect changes to the "culture," and attitude of BNL staff. However, it should be noted that this attitude does not appear to be generally translated into sloppy environmental performance.

- (E) Include a scope section (clarifying whether any activities or operations are excluded) in the ISO 14001 Plus EMS Manual.

OHSAS: The OHSAS 18001 program, a newer program in place site wide for less than a full year, is behind the EMS in development and incorporation into work planning processes of line organizations. At this stage, OHSAS 18001 is not fully integrated into the OSH program of many site level programs and line organizations. However, the OHSAS/ISM program elements are in place and are maturing. Improvements were very apparent in many areas. OHSAS 18001, at the institutional level, is not adequately resourced to ensure the site program elements are sustained and improved. Line organizations generally have satisfactory OSH resources in place for compliance. Some safety and health issues and initiatives (e.g. Nationally Recognized Testing Laboratory certification of electrical equipment, Industrial Hygiene exposure monitoring, material handling, NFPA arc flash calculations, NFPA 70 and building fire protection and detection) are in a crisis management mode, with needs exceeding the financial and personnel resources to correct the known deficiencies. The funding for these OSH priorities in the budgeting process is not fully coordinated.

B. POLICY

OPPORTUNITIES FOR IMPROVEMENT

- (E) Many managers were not able to clearly articulate all environmental commitments in policy, and many were not familiar with their organization's FY07 environmental objectives.
- (E) Some staff and managers did not understand what the term "pollution prevention" (a key commitment in the policy) means.
- (E and S) Some people could not locate the Environment, Safety, Security and Health (ESSH) policy on the Internet. Adding the policy to the BNL home page would demonstrate "corporate" commitment.

NOTEWORTHY PRACTICES:

- (E and S) The revised ESSH policy is more clean, clear and concise than 2004 version.
- (E and S) EENS has developed a list of locations where it places copies of the policy and other ESH information.

C. ASPECTS AND IMPACTS (EMS) and HAZARD AND RISK ASSESSMENT (OHSAS)

MINOR NONCONFORMITY

- (S) Environmental EWMSD risk assessments are not being reviewed on an annual cycle sufficient for completing the review in a three year period, as per the OHSAS Interim Procedure 2004-18001-002. On risk assessment dating from 12/17/04 to 06/07/05, only:
  - 2 of 20 Facility Risk Assessments (FRAs) had been updated from their original versions .
  - 8 of 15 ESD Job Risk Assessments (JRAs) had been revised in 2006, and
  - 0 of 25 WMD JRAs had been reviewed since 2005.

OPPORTUNITIES FOR IMPROVEMENT

- (E) The Environment Aspects Form in the Identification of Significant Environmental Aspects and Impacts Subject Area lacks a block for date/revision number and approval.

- (S) The CMPMS Experimental Safety Review (ESR) for one operation had been split into two forms. Some information needed to be removed for clarity of the description of controls of the operations. (corrected).
- (S) BES's risk assessment MRA-JRA 001, Electron Microscopy was missing the completion date. (corrected).
- (S) EWMSD Facility Risk Assessment for Building 51 (06/07/05) has "Controls Added to reduce risk," but "% Risk Reduction" was not calculated.
- (S) Finance Directorate Job and Facility Risk Assessments do not have the "Approved by" typed onto the form on the web accessible versions.
- (S) Independent Oversight's Job and Facility Risk Assessments do not have the "Approved date" on the web accessible versions.

NOTEWORTHY PRACTICES:

- (E and S) Bauer, Hoey and Peters are proactively evaluating hazards and controls for nanoscience operations.
- (S) NSLS has automated the Safety Approval Form, linking records from proposal to startup to closeout.
- (S) Physics has merged Job Risk Assessments into the ESR, which is the primary ESH document researchers use. This effort helps integrate OHSAS into the ESH program of Physics.
- (S) In response to the 10 CFR 851 Worker Safety and Health Program, EENS compiled lists of activities and source locations for hoods and alternative hoods.

D. LEGAL & OTHER REQUIREMENTS

OPPORTUNITIES FOR IMPROVEMENT

- (E) The institutional level EMS Management System Description included a list of permits, some of which were expired.
- (E) The ISO 14001 Program Description does not document how BNL determines how requirements apply to its environmental aspects.
- (E) NYS Environmental Conservation Law Article 33 Section 33-0303 should be deleted from F&O Procedure EP-ES&H-204 (Pesticides), as it does not contain requirements applicable to BNL.
- (E) EO 13221 Energy-Efficient Standby Power Devices is not listed in the institutional level EMS Management System Description.
- (E) Scheduled Subject Area review dates were not met for the Nonconformances, Identifying and Reporting; and Non-radioactive Air Emissions Subject Areas.
- (E and S) There are process and content issues related to SBMS Subject Area development, and the SBMS website and delivery mechanism (note – counted as one finding):
  - Line organizations want more time for review and input on proposed changes.
  - Provide a list of Subject Areas scheduled for major revision (in progress).
  - Ensure that the effective date is changed and a summary is provided to the line when changes to Subject Areas meet the definition of 'major.'
  - The "effective date" is not really the effective date for Subject Areas with an implementation schedule.
  - Ensure that the notices on Subject Area changes include required content (i.e., a summary of specific changes, required actions, and an implementation schedule if there is one.)
  - The "Date Last Modified" could be relocated to a prominent location on the first page of Subject Areas to facilitate identification of revision status.
  - Changes to Subject Areas are not specifically flagged (e.g., via highlighting) in the online version, although the revision history is provided.

- It is not possible to access the Subject Area revision history from offsite without a BNL user name and password.
- (E) One Subject Area temporarily "disappeared" from the SBMS index and Management System.

- (S) Worker Health & Safety Management System requirement verification of applicability and implementation pathway is not complete for 60% of Primary SBMS Records of Decision and 84% of Parsed Records of Decisions.
- (S) Worker Health & Safety Management System requirement tracking for non DOE Orders (i.e. applicable OSHA, NFPA, and ANSI standards) is improving, but still is not up to date for all requirements.
- (S) Changes to Industrial Hygiene Subject Areas to correct the lack of written commitment to employee exposure monitoring were identified as 'minor,' when they actually met the SBMS definition of 'major.' Notification of the change was not made to affected organizations, nor was the effective date of the Subject Areas changed.
- (S) Within the analysis tool, the Hazard Analysis Subject Area has links to out of date ESH Standards.

NOTEWORTHY PRACTICES:

- (E) Records of Decision for 99% of Primary EMS and 67% of parsed requirements are complete.
- (E and S) Some Subject Matter Experts roll out Subject Areas, and provide personal communication training to affected staff.
- (E and S) The Requirements Management Process is now automated, and stewards can track the status of their Records of Decision.

E. OBJECTIVES, TARGETS & PROGRAMS (EMS) and OBJECTIVES AND MANAGEMENT PROGRAMS (OHSAS)

OPPORTUNITY FOR IMPROVEMENT

- (E and S): Improve the timeliness, quality and focus on objectives and targets. (note - counted as one finding)

  Timeliness:
  - (E and S): Institutional level guidance on environmental objectives was not issued until 11/13/06, and guidance on OSH objectives was not issued until 11/09/06. Some organization-level objectives were not finalized until January or February of 2007. The site level Objectives should be issued in the July- August timeframe to be available to line organizations prior to the start of the fiscal year.
  - (E) The Identification of Significant Environmental Aspects Subject Area does not specify the due date for an initial set of objectives and targets for the Fiscal Year (FY). Note: It is understood that objectives and targets may be revised during the fiscal year as new information becomes available or circumstances change.
  - (E) In order to determine whether FY07 objectives and targets had been established yet, each organization had to be queried individually, as this information is not tracked/stored/linked in one place.
  - (E) The status of a finding from the 04/06 internal audit - clarify procedure requirements for writing objectives and targets for all organizations with minor impacts (ESH&Q) – was not documented, and does not appear to have been addressed yet.

  Quality:
  - (E) Some objectives are unlikely to result in real environmental improvements.
  - (E) In a few cases, resources outside the organization needed to achieve an objective were not identified in Self-Assessment Plans.

- (E) The BES plan did not have targets or measures for some objectives, such as addressing stakeholder concerns: reviewing questions, and planning for future presentations.
- (E and S) Linkage to institutional level goals was not always clear, making it more difficult to assess flow down.
- (E and S) Different formats make the lists of objectives harder to review, and increase the likelihood that required information (like budget and additional resources) will be missed.

Focus:

- (E and S) Highlight improvement targets (1-3 meaningful environmental goals/year per organization), and group them under the relevant higher level objectives. Clearly distinguish between assessments and monitoring and maintenance vs. improvement objectives. Indicate whether an objective is "E" or "S" or both.
- (S) Life Science Directorate: Correct the title on the FY 07 Self Assessment Plan "Approach" column in Attachment 1 from "ISO 14001 Targets" to "ISO 14001/OHSAS 18001 Targets".
- (S) BES web page has an incorrect title on the Objectives. The FY 2007 Self-Assessment plan is posted on web page as the "*FY 2006 BESD OSH Management Plan.*" The title should be changed to "*FY 2007 BESD OSH Management Plan.*"
- (S) The OSH Objectives for Support Organizations Reporting to the Director's Office (IA&O, Finance; OP&SP; ISD; ITD; and HR/OMC) have not been updated for FY07 on their web pages.

NOTEWORTHY PRACTICES

- (E and S) C-AD and Plant Engineering have achieved dramatic reductions in PCB inventories.
- (E and S) F&O prepared a useful, clear end of year status on their performance against their objectives and targets.
- (E and S) F&O tracks the status of OSH and EMS objectives monthly in "Flash Reports" to management. This format targets problems areas for management attention.
- (S) The Physics Department limited the scope of the OSH objectives in an effort to concentrate efforts on significant improvements, and produced two well formatted objectives that are quantified and measurable.
- (S) Environmental Restoration neatly packaged their objectives as an appendix to their OSH Manual.

F. RESOURCES, ROLES, RESPONSIBILITIES, AUTHORITIES (EMS) and STRUCTURE AND RESPONSIBILITY (OHSAS)

MINOR NONCONFORMITY

- (S) At the site level, the OHSAS 18001 program is not properly resourced (personnel) for maintenance of the OHSAS system.

OPPORTUNITIES FOR IMPROVEMENT

- (E) No seed money has been provided for Pollution Prevention for FY07. This funding provides a high return on investment and reduction in risk.
- (E) The Management System Description does not indicate that the EMS Management Rep is the EWMS Manager and that their roles are documented in their R2A2.
- (S) Some organizations do not feel that they have good integration with SHSD Safety and Health representative program, with issues related to quantity and consistency of the support person assigned.

NOTEWORTHY PRACTICES

- (E) Good technical support is provided to the line by Environmental Compliance Representatives. They are well integrated into organizations, are trusted, provide consistent answers, and are solution oriented.
- (E) The Data Quality Objective process for environmental monitoring focused limited resources on risk, saving hundreds of thousands of dollars.
- (E and S) There are strong EMS and OSH representatives within the line who actively support and represent Divisions well. There has been continuity in their assignments.
- (E and S) Several departments have funded pollution prevention and safety solutions for which lab funding was not available.
- (S) The Instrumentation Division indicated they had inadequate resource allocations for OSH support from ESH&Q and wanted to seek a mechanism to increase Safety & Health Representative support available to their programs.

G. COMPETENCE, TRAINING & AWARENESS

OPPORTUNITIES FOR IMPROVEMENT

- (E) Several Computer Based Training Programs should be updated, additional clarification added, and the content made more concise and relevant (e.g., GE-ENV-GET, spill consequences. TQ-EMS-1 should be reviewed for consistency with revised ISO 14001:2004 requirements. Contractor/Vendor training needs addition of "E" and Security, consequences, emphasis on pollution prevention, and some additional clarification.)
- (E and S) Researchers who are contractors need to be directed to Guest Site Orientation/New Employee training instead of to Contractor/Vendor training.
- (E and S) Guests from another lab are who are not onsite are often listed as active in the BrookhavenTraining Management System (BTMS), with expired training.
- (S) The electrical safety web courses need additional tiers of training with requirements for Lockout Tagout specific to scientific organizations' roles.
- (S) Subject Matter Experts need to offer training to ESH Coordinators on new or substantially revised Subject Areas.

NOTEWORTHY PRACTICES

- (E) The New Supervisor training provided by EWMS Division Manager is focused and relevant, and 49% of managers/supervisors have completed it. (Note: consider providing content to other managers.)
- (E and S) A Read and Sign training was developed for fuel delivery drivers in response to a release.
- (E and S) Some organizations have put controls in place to prevent people without appropriate training from conducting work (e.g., NSLS prox card access, C-AD LOTO signature, acceptance of waste by EWMSD)
- (E and S) BTMS is a useful tool that allows supervisors to the training status of their workers and alerts them when qualifications or training have expired.
- (S) A Medical Department researcher followed up on an incident with a targeted staff presentation that emphasized use of Personal Protective Equipment and safe work practices.
- (S) F&O conducted special emphasis training as a result of fact finding from an injury event.
- (S) The Biology Department has developed a Local Emergency Plan Information sheet for new employees and guest researchers.
- (S) Physics, EENS and Life Sciences Directorates have developed "introduction to their Directorate" presentations for new employees and guest researchers which emphasize OSH issues.

H. DOCUMENTATION

NOTEWORTHY PRACTICES:

- (E) The F&O program description focuses on implementation, and does not rehash institutional level information.
- (E and S) EENS and NSLS Program Descriptions include a table showing clear requirements flow down from the standard to the institutional level to the organization-level.

I. MANAGEMENT REVIEW

MINOR NONCONFORMITY (related to procedures):

- (E) Two procedures on Management Reviews (Environmental Assessments Subject Area and ISMS Interim Procedure 2004-18001-007) are in effect, but neither clearly specifies all inputs/content required by ISO 14001. It was not clear from documentation (slides and minutes) that all required elements were either covered/not applicable (this issue was also identified in 04/06 internal audit, but was not addressed yet).

OPPORTUNITIES FOR IMPROVEMENT

Site level

- (E) The Institutional level FY06 and FY07 Management Review was conducted on December 18, 2006, but the Record of Decision has not been completed, and the minutes (which were completed on December 20) have not been distributed yet.
- (E and S) When EMS and OHSAS reviews are combined, clarify in the discussion and minutes whether concerns or actions apply to E, S or both, to help determine appropriate actions and owners.
- (E and S) Encourage conducting the organization level reviews prior to the conducting the institutional level Management Review.
- (E and S) In advance of the Management Review, request input from management on desired focus areas.
- (S) Review the presentation style, list of invitees, room configuration, and pre-meeting handouts to improve the level of discussion on key issues.

Organization-level:

- (E and S) The SMD Management Review was not completed until 1/30/07. The minutes were not posted on their web site at the time of the audit.
- (E and S) The FY06 Instrumentation Management Review was not conducted in the time frame indicated in their Program Description.
- (E and S) The due date (e.g. in the PEMP) for Management Reviews should allow sufficient time to gather data and report on end of FY performance.
- (S) CAD and SMD's management review did not clearly show the SMD cost breakdown. In future combined SMD/CAD reviews, the costs should be more clearly defined as to the organizations.

NOTEWORTHY PRACTICES

- (E) There is clear evidence of continual improvement in response to feedback from Management Reviews and lessons learned.
- (E and S) Organization and institutional level EMS Management Reviews are seen as useful, interesting and valuable by management.

J. ELEMENTS FOR WHICH PARTIAL EVALUATIONS WERE CONDUCTED

J-1. COMMUNICATION (Partial Evaluation)

OPPORTUNITY FOR IMPROVEMENT

- (E) The F&O ESH Concerns form does not mention "environment" in the text, although it does include it in the title.

NOTEWORTHY PRACTICES

- (E) C-AD EMS website: C-AD Environmental Highlights 2006 contained many links to Frequently Asked Questions, past management reviews, and information on how to dispose of waste.
- (E and S) The EENS Safety Newsletter provides an excellent forum for highlighting organization-specific E and S issues.
- (E and S) F&O has a "ESH Concerns form" confidential form to report ES&H concerns.

J-2. DOCUMENT CONTROL (EMS) and DOCUMENT AND DATA CONTROL (OHSAS) *(Partial Evaluation)* – NOTE: A systemic nonconformity in this element has been identified and is already being addressed via a corrective action plan –additional instances of problems are noted below.

OPPORTUNITIES FOR IMPROVEMENT

- (E and S) An out of date policy was posted at the Sewage Treatment Plant (corrected).
- (E and S) Forms used in the Sewage Treatment Plan lacked an indication of revision status (e.g., date or revision number).
- (S) An out of date F&O ESH Concerns form (1999) was used to report a safety concern.
- (S) A safety precaution posting above a paper shredder was an out-dated version (corrected).
- (S) A CMPMS Risk Assessment was not dated and signed. This was initially identified in FY06 internal audit finding but was not resolved until noted again on this audit (2/08/07).

NOTEWORTHY PRACTICE

- (E and S) EP has an excellent Controlled Document methodology for its "Policy & Procedure Manuals," including a red ink stamp so people know copies with black and white stamps are not controlled.
- (S) A Plant Engineering WTF operator demonstrated outstanding knowledge of Document Control procedures.
- (S) Plant Engineering places strong emphasis on controlling the Procedures Manual and ESH Posting boards with administrative and ESH support staff responsible for keeping the documents up-to-date.

J-3. OPERATIONAL CONTROL (Partial Evaluation)

OPPORTUNITIES FOR IMPROVEMENT

- (E) The EO 13101 program (Environmentally Preferable Purchasing), needs improvement (e.g., reporting, procedures, procurement controls), and progress has been slow.
- (E) F&O should determine the cause of an unpleasant, chemical taste and smell in water from a dispenser in the cafeteria, and take appropriate actions to avoid recurrence.
- (E) Safeguards & Security should clarify on Process Assessment Form SE-535-WCT Live Fire Range that lead shot is the hazardous waste when disposed, but it is not a waste until it is culled and is not subject to requirements if recycled.

- (E and S) The SBMS Subject Area: Exhaust Ventilation. Section 5: Decommissioning, Modifying, or Changing the Operational Status of Fixed Exhaust Ventilation Systems may need to be clarified to address interpretation issues raised by EENS Directorate.
- (S) SHSD should evaluate the consistency of recommendations on the use of Hydrofluoric Acid gloves in the Personal Protective Equipment (PPE) Subject Area.
- (S) In the Biology Department document "Employee Safety Handout" (RLC Rev 1/29/07), consider adding a title (e.g., "New Employee Safety Handout," or "New Employee ESH Handout" if it also covers environmental protection), and expand or rework the section on Hand Protection (e.g., indicate that Biology provides PPE, and if other types of PPE are needed, they will be obtained.)

J-3. RECORDS (Partial Evaluation)

MINOR NONCONFORMITY

- (E) An F&O inspection in December 2006 determined that the high level alarm for hypochlorite tank in the Water Treatment Plant was not operational. A work order was put in requiring correction within 24 hours, and there was verbal indication that the alarm was repaired, but no documentation (i.e., the work order was not closed out).

J-4. EVALUATION OF COMPLIANCE (Partial Evaluation)

- NO FINDINGS.

J-5. AUDITS (EMS) (Partial Evaluation)

OPPORTUNITY FOR IMPROVEMENT

- (E) Opportunities for Improvement identified in the 04/06 internal audit were not tracked.

7. AREAS SUGGESTED FOR FURTHER INQUIRY IN FUTURE AUDITS

The ISO 14001 and OHSAS 18001 standards do not require evaluation of all 18 elements in all line organizations every three years – only that organizations be appropriately sampled to evaluate whether the management system meets the intent, is implemented, effective, and maintained. BNL EMS audit procedures do require evaluation of all 18 elements over a three year period.

The following areas could be considered for further inquiry in future audits:

EMS & OHSAS:

- Elements not covered in past 2 years.
- Areas where there are problems, high risks, the status of implementation or effectiveness is not well understood, a new requirement/process/corrective action has been implemented, or the area has not been evaluated recently.
- Monitoring of progress on objectives and targets (there appears to be variation in different line organizations in the system and formality)
- Corrective and preventive actions, including effectiveness and evaluation of extent of condition (e.g., revised Management Review Subject Area)
- Document Control after corrective actions are implemented

- Emergency Preparedness & Response
- NASA Operations

8. RECOMMENDATIONS REGARDING FUTURE COMBINED EMS AND OHSAS AUDITS

For this assessment, several line organizations requested that the EMS and OSHAS audits be combined. The following are suggestions for any future combined audits, to ensure that the process workes best for both the line and support organizations.

- Team members for both the EMS and OSHAS elements need to participate in planning and scheduling
- Designate one lead for the entire audit to coordinate, manage debriefs, and ensure consistent classification of findings.
- Make necessary resources available (i.e., free up auditors).
- Use auditors trained in both ISO 14001 and 18001 standards if possible.
- As needed, involve Subject Matter Experts in Topical/Operational Controls and Hazard Evaluations.
- Group related elements (objectives and targets + monitoring and measurement).
- Combine the audit closeout presentation and the audit executive summary by element if time allows, as it is easier to digest, and encourages sharing of noteworthy practices.
    - If the presentation and report are combined, clearly distinguish between issues that are associated with safety, environmental protection, or both. If so, clearly ID safety vs. environmental issues.
- Set up a Sharepoint site to manage the report generation process, with access afforded to all auditors.

ATTACHMENT B: Table showing distribution of EMS and OHSAS Audit Findings, by element

Minor = Minor Nonconformity
OFI = Opportunity for Improvement
NP = Noteworthy Practice
E = EMS
S= OHSAS
E and S = EMS and OHSAS
Full = Full Evaluation of that element
Partial = Partial Evaluation
NE = Not Evaluated

ISO 14001 Section / OHSAS 18001 Section	Minor (E)	Minor (S)	OFI (E)	OFI (E and S)	OFI (S)	NP (E)	NP (E and S)	NP (S)
General Requirements (Full)			2					
Policy (Full)			2				2	
Aspects / Hazards and Risks (Full)		1	1		5		1	3
Legal & Other Requirements (Full)			5	1	4	1	2	
Objectives, Targets & Programs (Full)				1			3	2
Resources, Roles, Responsibility & Authority / Structure & Responsibility (Full)		1	2		1	2	2	1
Competence, Training & Awareness (Full)			1	2	2	1	3	4
Communication / Consultation (Partial)			1	0		1	2	
Documentation (Full)			1	1		1	1	
Control of Documents / Documents & Data Control (Partial)				2	3		1	2
Operational Control (Partial)			3	1	2			
Emergency Preparedness & Response (NE)								
Monitoring & Measurement / Performance Measurement & Monitoring (NE)								
Evaluation of Compliance (Partial)								
Nonconformity, Corrective and Preventive Action / Accidents, Incidents, Nonconformances, Corrective & Preventive Action (NE)								
Control of Records / Records & Records Management (Partial)	1							
Audits (Partial)			1	0				
Management Review (Full)	1		1	6	2	1	1	
TOTAL	**2**	**2**	**20**	**15**	**19**	**7**	**18**	**12**

ATTACHMENT C-1: ISO 14001 EMS CHECKLIST [See separate file]

ATTACHMENT C-2: OHSAS 18001 CHECKLIST [See separate file]

- **ATTACHMENT D - Alphabetical list of individuals interviewed and attendees and opening and closing meetings**

INDIVIDUALS INTERVIEWED DURING AUDIT

Ackerman, Adams, Aloi, Amabile, Anderson C, Angona, Anselmini, Aronson, Bauer, Bebon, Bond, Bullis, Butera, Campione, Canestro, Carr, Casey, Chaloupka, Cirnigliaro, Collins J, Davis, L, Derocher, Deschamps, Dilgen, Eaton, Emrick, Ferrone, DiNardo, Dirker, Figueroa L, Finfrock, Flege, Fowler, Galea, Gibbs, Gill, Gmur, Goode, Gunther, Hansen H, Healey, Heneveld, Henn, Hill, Hoey, Hovell, Hrbek, Isaacs, James R, Jochen, Kao, Karol, Kelly R, Kershaw, Klaus, Lebel, Lee R, Lloyd, LoDestro, Lowenstein, McNerney, Madaia, Mausner, Mcilroy, Miller J, Muench, Needrith, Newton, Orta, Patterson C, Pavlak, Peters, Pohlot, Porretto, Ports, Sabatini, Sallustio, Sauerwald, Schaeffer, Scheffy, Schwaner, Scocca, Scott J, Selva, Selvey, Stawski, Stein S, Sreearunothai, Sullivan P, Sutter E, Sutter P, Sutter K, Tarpinian, Taylor, Ullo, VanEssendelft, Wanderer, Wang, Williams

ATTENDEES AT OPENING MEETING

Ackerman, Bernolc, Cabelli, Carr, Chaloupka, DeRocher, Emrick, Ferrone, Gill, Goode, Gmur, Granzen, Gray, Gunther, Heneveld, Karol, Klaus, Lee, Pohlot, Sabatini, Selva, Selvey, Skipper, Sullivan, Stein, Taylor, Van Essendelft, Weilandics, Zimmerman E.

ATTENDEES AT CLOSING MEETING

Anderson C, Aronson, Bauer, Bernolc, Bond, Cabelli, Canestro, Carr, Clancy, Conklin, Costa, Emrick, Ferrone, Gmur, Gransen, Grizzel, Gunther, Heinrich, Heneveld, Hill, Hooda, Karol, Klaus, Kneitel, Lebel, Lee R, Looney, Lowenstein, Madaia, Maugeri, McCann, Orta, Peters, Pohlot, Ports, Sabatini, Schaefer, Schwaner, Scocca, Selva, Selvey, Stein S, Sullivan P, Tarpinian, Taylor, VanEssendelft, Williams P, Zimmerman E.

ATTACHMENT E – EMS AUDIT PLAN [See separate file]

ATTACHMENT C-1:
ISO 14001:2004
Environmental Management System (EMS) Assessment Checklist

Organization Assessed: Brookhaven National Laboratory

Location: Upton, NY

Scope: General requirements, as well as Environmental policy, Environmental aspects, Legal & other requirements, Objectives, targets & programmes, Resources, roles, responsibility and authority, Competence, training & awareness, Communication (partial, F&O), Documentation, Control of documents (partial, F&O), Operational control (partial, F&O), Evaluation of Compliance (partial F&O), Records (partial F&O), Internal audits (partial), and Management review.

Audit Plan: ISO 14001 Assessment of BNL EMS, Audit Plan, 01/31/07, Rev.0 (Attachment E.)

Organization Point of Contact for Assessment:

John Selva, Environmental & Waste Management Services Division, Field Services Supervisor/EMS Program Manager, Brookhaven National Lab, PO Box 5000, Upton, NY 11973. Phone: (631) 344-8611, Fax (631) 344-3223. E-mail: selva@bnl.gov

Dates of Record Review: January 29-February 2, 2007

Dates of Onsite Evaluation: February 5-9, 2007

Lead EMS Assessor: ***Elizabeth A. Zimmerman***, Lead (EMS)
EMS-A Certified Auditor, RABQSA International (EMS-#E052181)
Certified Environmental Professional, Academy of Board Certified Environmental Professionals (#379)
Pacific Northwest National Laboratory, ESHQ, Richland, WA
Mailing Address: 15 Shaw Road, Woodstock Valley, CT 06282-2623
Phone: (860) 974-3020 Fax: (860) 974-3020 (call first)
E-mail: Elizabeth.zimmerman@pnl.gov

EMS Assessment Team Member:

David Skipper
Completed ISO 14001:2004 EMS Lead Auditor Training
ORNL, Environmental Protection & Waste Services, Bethel Valley Road, PO Box 2008 MS 6395, Oak Ridge, TN 37831, Phone: (865) 576-5748, Fax: (865) 576-6196
Email: skipperdd@ornl.gov

Notes:

- This EMS audit was combined with an OHSAS 18001 audit. The two safety auditors were Robert Selvey and Nicole Bernholc, both of whom had completed the OHSAS 18001 lead auditor training. Their findings are documented in a separate checklist in Attachment C-2.
- When a finding relates to BOTH the EMS and OHSAS, it is preceded by the notation "(E and S)."

Report Distribution:

- **Draft**: **BNL provided** [Recommended distribution – owners and individuals directly affected by findings, others who need to review for factual accuracy.]
- **Final**: **[**Recommended distribution to environmental protection program managers, ESHQ Managers, Management System Owners, line organizations affected by findings (including noteworthy practices); Executive Summary to Level 1's and 2's, make full report available online.]

Status of Assessment Report:

- Draft for review and comment Date 02/27/07 Revision Number: 0
- X__ Final Date 03/13/07 Revision Number: 0

Environmental Management System requirements			**GENERAL REQUIREMENTS – SUMMARY**	
ELEMENT:	4.1	**TITLE:**	*General Requirements*	**Assessor**: Zimmerman

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
The organization shall establish, **document, implement** and maintain an **EMS in accordance with** the requirements of **this** International Standard **and determine how it will fulfill these requirements.**	X		
The organization shall define and document the scope of its EMS.	X		

IMPLEMENTATION OF STANDARD:

Discussion: BNL's EMS has been registered to the ISO 14001 standard since 2001. The scope of BNL's EMS registration is identified on their registration certificate as including all facilities, experiments, and operations managed by Brookhaven Science Associates at Brookhaven National Laboratory in accordance with the EMS. The scope does include products and services. The EMS Manual notes that the DOE Brookhaven Group and the NOAA weather station are not included within the scope of the Laboratory-wide registration.

Overall the system meets the intent of the standard, is well established, and appears to be strong and comprehensive. It is being maintained. There is clear evidence of continual improvement. As expected, there is additional room for improvement.

There appear to be opportunities to further streamline (integrate, simplify, standardize, and automate) various parts of the EMS to make it less cumbersome. Sharing noteworthy practices, and taking some work (including paper where possible) out of the system, will make it easier and more likely for people to 'do the right thing."

Continued….

During the assessment, the auditors noted some "little things" that, taken together, may indicate an opportunity to increase awareness and affect changes to the "culture," and attitude of BNL staff. However, it should be noted that this attitude does NOT appear to be generally translated into sloppy environmental performance.
For example:

1. The hard copy documents provided to auditors for the document review phase of this audit were not double-sided.
2. On the evening of 02/04/07, the interior and exterior doors at one entrance to the new Research Support Building were wide open, due to a problem with door adjustment. The building is still considered to be in shakedown mode, but is occupied and heated.
3. There were two releases from vehicles during the week of the onsite audit: one antifreeze leak from a private vehicle in a paved parking area, and a radiator coolant spill from a Safeguards & Security vehicle.
4. On 02/06/07, the auditor noted that water from a dispenser at the cafeteria at Berkner had an unpleasant, chemical odor and taste. (See related finding under Operational control.)
5. In Building 460, at 10:30 p.m. on 02/07/07, 11 out of 18 offices were still fully lit. There may be a problem with motion sensors. (Note: A written Condition Report requesting an evaluation of existing motion sensors was prepared by Environmental and Waste Management Services Division [EWMSD] on 02/08/07).
6. The area behind the Safeguard & Security office was littered with plastic bags and trash. The source of the litter was not clear, as the prevailing wind blows towards the building.
7. Trash cans are emptied regularly, but casual spot checks in various buildings showed white paper and plastic bottles in a number of trash cans, many of which were located next to or near recycling bins.
8. There is an SBMS requirement that *"All employees, subcontractors, retirees, household relatives, and guests must wear their badges while on-site on the outermost garment above the waist."* The lead EMS auditor often refers to badges for correct spelling of interviewees names, and noticed that a number of people were not wearing their badges during this assessment, and four of them were not carrying their badge on their person, including: 1 Chair, 4 PI's (1 who was formerly a Chair), 4 Post Docs, 1 Design Manager, 1 Administrative Assistant, 1 Custodian, 1 Technician, and 3 unknown (researchers?). Two people wore their badges so that were not visible or were below waist: 1 Safeguards and Security and 1 Technician/Building Manager.
    - When those who were not wearing their badge were asked why, the individuals responded with a variety of reasons, including: it is not a rational requirement, it does not add value, it's only a suggested policy, it's dangerous (in the laboratory, they indicated that lasers could reflect off the plastic or the badge could knock over chemicals or get caught in machinery if on a necklace type holder), they forgot it, it was broken, they were concerned about losing it (and thus kept it in their wallet), they felt everyone knew who they were, that universities where they used to work did not require badges, and the requirement is not enforced.
    - Note that the ES&H Briefing checklist says "*Carry BNL badge at all times,"* but does not indicate that it must be worn.
    - This observation raised a concern that staff or visitors might choose not to comply with some applicable requirements because they think it is not right or necessary, or it is too hard. Some of the people queried did not appear to have confidence that it would be possible to change the system (indicating they have tried and failed, or that it is too hard.)

Opportunities for Improvement:

1. During the assessment, the auditors noted some "little things" (documents not double-sided, two releases from vehicles, lack of energy conservation, inconsistent recycling, litter, people not wearing badges). Taken together, these may indicate an opportunity to increase awareness and affect changes to the "culture," and attitude of BNL staff. However, it should be noted that this attitude does not appear to be generally translated into sloppy environmental performance.
2. Include a scope section (clarifying whether any activities or operations are excluded) in the ISO 14001 Plus EMS Manual.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- ISO 14001 Plus EMS Manual, at https://sbms.bnl.gov/SBMSearch/ProgDesc/iso14001/ISO14001_PD.cfm?ProgdescID=1, last reviewed 02/15/2005
- SBMS Subject Area: Badges, Passes, and Vehicle Identification (effective date 2/15/2004)
- ESH&S Briefing Checklist, 3.1/1i05e011.doc, 07/2004
- EWMSD Condition Reporting Form, 2/8/07 re: office lights
- EMS/OHSAS Internal Audit briefing, Life Sciences, 02/05/07

Environmental Management System Model			**ENVIRONMENTAL POLICY**	
ELEMENT:	4.2	**TITLE:**	*Environmental Policy*	**Assessor**: Skipper/Zimmerman

ISO 14001 STANDARD:	**YES**		**PARTIAL**	**NO**
Top Management shall define the organization's environmental policy and ensure that, **within the defined scope of the EMS**, it:	a)	X		
a) is appropriate to the nature, scale and environmental impacts of its activities, products, or services;	b)	X		
b) includes a commitment to continual improvement and prevention of pollution;	c)	X		
c) includes a commitment to comply with **applicable legal requirements** and with other requirements to which the organization subscribes **which relate to its environmental aspects;**	d)	X		
d) provides the framework for setting and reviewing environmental objectives and targets;	e)	X		
e) is documented, implemented, maintained	f)	X		
f) is communicated to **all persons working for or on behalf of the organization**;	g)	X		
g) is available to the public.				

IMPLEMENTATION OF STANDARD:

Discussion: Like other Laboratories that utilize the Standards Based Management System (SBMS), BNL relies on a set of standards of practice to articulate policies and expectations. BNL has further emphasized the Laboratory's specific commitments to environmental management and improvement through issuance of an Environmental Stewardship Policy.

On 4/19/04 Safety, Security and Health were added to the policy. The policy was revised again in 09/06, in response to feedback that it was too complicated. The current "ESSH" policy covers environment, safety, health and security. It contains high-level references to all commitments required by ISO 14001. The elements that relate to the EMS requirements are:

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

There is a link to the ESSH policy in the site index on the Internet at http://www.bnl.gov/bnlweb/site_map.asp , and a link from the EPWS home page, and the SBMS BNL policies page at https://sbms.bnl.gov/policies.cfm#4, but not the ESH&Q Directorate home page at http://www.bnl.gov/ESHQ/main_e.asp or the SHSD web page at http://www.bnl.gov/esh/shsd/. When asked, some people could not locate the ESSH policy on the Intranet.

All links to environmental policy in the Intranet and Internet that were tested went to the latest version. A couple of weeks prior to the onsite audit, this was not the case.

The lab-wide Program Description indicates that the policy is communicated to all employees through Laboratory-wide mailings, training programs, publications such as the BNL Bulletin and EMS brochures, and is available via several links on the BNL Web site. Specialized training programs such as Contractor/Vendor Training and GET are provided to short-term staff. The policy is also published in the Annual Site Environmental Report.

When middle and senior managers were asked how they would articulate the policy to a new person on staff, many were vague. Some managers did not mention the pollution prevention commitment, and others did not mention compliance, indicating it was "understood." Some did not appear to understand the difference between waste management and pollution prevention. (Pollution prevention is a key commitment in the policy.) In some cases, answers were simply "Work safely and protect the environment." It is not the auditor's goal to evaluate a manager's ability to memorize or read, but there is an expectation that managers are able to clearly and sincerely communicate the expectations in the policy in a compelling way. This is not considered a nonconformity because managers DID demonstrate understanding when prompted. Both managers and staff were generally very clear on the environmental aspects (hazards) and controls associated with their work. Many managers have demonstrated environmental leadership and sensitivity to environmental issues. They were able to provide concrete examples of compliance and pollution prevention.

Some staff commented that dropping use of the C4P2 acronym for the policy commitments made it harder to remember them.

In an effort to ascertain whether non-staff understand the policy, five Post Docs, four Contractors, and two Guests were interviewed. Most understood the commitments in policy. All demonstrated an understanding of relevant hazards and controls. One contractor (an office person) did not know about calling x2222 in the event of a spill.

Opportunities for Improvement:

1. Many managers were not able to clearly articulate all environmental commitments in policy, and many were not familiar with their organization's FY07 environmental objectives.
2. Some staff and managers did not understand what the term "pollution prevention" means.
3. (E and S) Some people could not locate the Environment, Safety, Security and Health (ESSH) policy on the Internet. Adding the policy to the BNL home page would demonstrate "corporate" commitment.

Noteworthy Practices:

1. (E and S) The revised ESSH policy is more clean, clear and concise than 2004 version.
2. (E and S) EENS has developed a list of locations where it places copies of the policy and other ESH information.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- ESS and H Policy, 09/06/2006 (no revision number.)
- ESS&H Policy, 04/19/04
- BNL website at www.bnl.gov
- C-AD Environmental Highlights 2006 newsletter, no date.
- Monday Memo, Volume 9, Number 3, 02/05/07 Director's Message

Environmental Management System Model			**PLANNING**	
ELEMENT:	4.3.1	**TITLE:**	*Environmental Aspects*	**Assessor**: Zimmerman/Skipper

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
The organization shall establish, implement and maintain a procedure(s) **a)** to identify the environmental aspects of its activities, products **and** services **within the defined scope of its EMS** that it can control and **those it can** influence **taking into account planned or new developments, or new or modified activities, products or services, and**	X		
b) to determine those **aspects that** have or can have significant impacts on the environment (**i.e., significant environmental aspects**).	X		
The organization shall ensure that the **significant environmental** aspects are **taken into account in establishing, implementing and maintaining its EMS**.	X		
The organization shall **document this** information and **keep it** up-to-date.	X		

IMPLEMENTATION OF STANDARD:

Discussion: BNL's Significant Aspects are communicated to the public via their Annual Site Environmental report (which is available on the Internet) , and are also online at https://sbms.bnl.gov/SBMSearch/ProgDesc/iso14001/ISO14001_PD.cfm?ProgdescID=1

Each organization assessed maintained a table of the significant environmental aspects associated with their activities. The form for documenting aspects in the SBMS Subject Area Identification of Significant Environmental Aspects and Impacts does not have a place for a date or revision number, or a block where the person who did the final approval would sign off. It also has no form number. The contents of this document are subject to frequent change, and not having a place to note the status increases the likelihood that it will be missed. However, all completed forms reviewed did have dates on them, and had been reviewed recently.

The EMS Program Manager indicated the lab-level list of significant aspects has not changed since it was originally prepared, but several modifications associated with new planned activities were discussed at the most recent Management Review, and are

under consideration.

Opportunities for Improvement:

1. The Environment Aspects Form in the Identification of Significant Environmental Aspects and Impacts Subject Area lacks a block for date/revision number and approval.

Noteworthy Practice:

1. Bauer is proactively evaluating hazards and controls for nanoscience operations. (also see Safety Noteworthy Practice)

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- Life Sciences Environmental Aspects List, 05/26/06, v 14
- F&O Aspects list, 1/30/06, no rev. number
- BES Aspects Matrix, 06/16/06, Rev.2
- Program Description: ISO 14001 Plus Environmental Management System Manual , Effective Date: Jul 31, 2001
- SBMS Subject Area: Identification of Significant Environmental Aspects and Impacts, 04/15/2001
- SBMS Subject Area: Process Assessment (effective date 1/15/2004)
- Physics Significant Environmental Aspect Table (electronic – last revised 2/2/2007)
- Instrumentation Significant Environmental Aspects Table (11/14/06)
- ESHQ Significant Aspects Table (6/16/06)
- C-AD/SMD Significant Environmental Aspects Table (2/17/2006)
- C-AD/SMD Significant Environmental Aspects Table (11/22/06)
- EENS Significant Environmental Aspects Table (4/26/06)
- ER Significant Environmental Aspects (9/13/06)
- NSLS Significant Environmental Aspects (1/5/2007)

Environmental Management System Model			**PLANNING**	
ELEMENT:	4.3.2	**TITLE:**	*Legal and Other Requirements*	**Assessor**: Zimmerman/Skipper

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
The organization shall establish and maintain a procedure **a)** to identify and have access to **applicable** legal and other requirements to which the organization subscribes **related to its environmental aspects, and**	X		
b) **To determine how these requirements apply to its environmental aspects**,	?		
The organization shall ensure that these applicable legal requirements and other requirements to which the organization subscribes are taken into account in establishing, implementing and maintaining its EMS.	X		

IMPLEMENTATION OF STANDARD:

Discussion: The Record of Decision (ROD) process (which is covered under the Requirements Management Subject Area) was recently automated so RODs can be circulated and signed off electronically. 99% of Primary EMS RODs and 67% of requirements parsed to the EMS are complete. The SBMS Manager indicated that this is the highest level of completion for management systems at BNL.

EMS-owned Subject Areas are on a schedule for review. All had been reviewed or updated lately (e.g., Drinking Water Subject Area issued on 2/15/05, Hazardous Waste Subject Area revised on 10/27/05, and Liquid Effluents on 03/02/06), with the exception of the Non-Radioactive Airborne Emissions Subject Area, which was slightly past its due date. However, the Subject Area has been reviewed by the Subject Matter Expert and updates are in progress. The Nonconformances, Identifying and Reporting Subject Area is also past due for review. The SBMS Office Manager indicated that this Subject Area would be going away, however the due date for review had not been modified.

It is not possible to review Subject Area revision histories from offsite without entering a username and password. The SBMS office indicated this because the information is stored in a place on the server along with other internal reports. The revision histories reviewed for environmental Subject Areas were specific and useful. When environmental Subject Areas are updated, a notice is sent out summarizing what the changes are.

There was an Opportunity for Improvement from the 04/06 internal audit that SBMS should be modified to specify an implementation time frame when modifications to Subject Areas are posted, to prevent the line from appearing to fall into noncompliance. Each Subject Area has an "effective date" but some Subject Areas have an implementation schedule, and full conformance with the requirements is not really required on the date listed as the "effective date." See Opportunity for Improvement below.

Section 9 of the EMS Management System Description lists a number of permits (which contain requirements) with past due dates. It does not indicate the cases where the Laboratory can continue to operate under an expired permit if a complete application for renewal has been submitted. Renewal applications are tracked in the Family Assessment Tracking System (ATS). A separate database of permits and their status is maintained that links to the Facility Use Agreements, but this source does not "feed" the list in the EMS Management System Description.

An F&O operational control procedure associated with pesticide Application (EP-ES&H-204 (Pesticides) contained a reference to NYS Environmental Conservation Law Article 33 Section 33-030. That law is not listed in the requirements section of the EMS Management System Description. The Subject Matter Expert in EWMSD indicated it does not need to be listed because it relates to powers of the State Commissioner, and does not contain requirements applicable to BNL.

During the assessment, the Non-radioactive Airborne Emissions Subject Area temporarily "disappeared" from the EMS Management System Description and from the SBMS alphabetical listing. It reappeared the next day. The SBMS office indicated this was the result of a date glitch, and that they would be working to correct this situation in their documentation so it does not recur.

The status of EO 13221 Energy-Efficient Standby Power Devices, which is not listed in the requirements section of the Management System Description, is not clear.

The ISO 14001 Plus EMS Manual does not discuss how BNL determines how requirements apply to its environmental aspects.

Opportunities for Improvement:

2. The institutional level EMS Management System Description included a list of permits, some of which were expired.
3. The ISO 14001 Program Description does not document how BNL determines how requirements apply to its environmental aspects.
4. NYS Environmental Conservation Law Article 33 Section 33-0303 should be deleted from F&O Procedure EP-ES&H-204 (Pesticides) as it does not contain requirements applicable to BNL.
5. EO 13221 Energy-Efficient Standby Power Devices is not listed in the institutional level EMS Management System Description.
6. Scheduled Subject Area review dates were not met for the Nonconformances, Identifying and Reporting and Non-radioactive Air Emissions Subject Areas.
7. There are process and content issues related to SBMS Subject Area development, and the SBMS website and delivery mechanism:
   - Line organizations want more time for review and input on proposed changes.
   - Provide a list of Subject Areas scheduled for major revision (in progress).
   - Ensure that the effective date is changed and a summary is provided to the line when changes to Subject Areas meet the definition of 'major.'
   - The "effective date" is not really the effective date for Subject Areas with an implementation schedule.
   - Ensure that the notices on Subject Area changes include the required content (i.e., a summary of specific changes, required actions, and an implementation schedule if there is one.)
   - The "Date Last Modified" could be relocated to a prominent location on the first page of Subject Areas to facilitate identification of revision status.
   - Changes to Subject Areas not specifically flagged (e.g., via highlighting) in the online version, although the revision history is provided.
   - It is not possible to access the Subject Area revision history from offsite without a BNL user name and password.
   - One Subject Area temporarily "disappeared" from the SBMS index and Management System.'

Noteworthy Practices:

1. 99% of Primary EMS Records of Decision and 67% of parsed requirements are complete.
2. Some Subject Matter Experts roll out Subject Areas, and provide personal communication training to affected staff.
3. (E and S) The Requirements Management Process is now automated, and stewards can track the status of their Records of Decision.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED:

- SBMS Subject Area: Non-Radioactive Airborne Emissions (effective date 3/15/1999)
- Revision Histories for SBMS Subject Areas: Liquid Effluents, NEPA, Pollution Prevention and Waste Minimization, Regulated Medical Waste management
- ISM requirements/Safety Improvement Project, Requirements Management (WBS 3.2.1), Management System Champion and Steward Meting 08/07/06

Environmental Management System Model			**PLANNING**	
ELEMENT:	4.3.3	**TITLE:**	*Objectives, Targets and Programme(s)*	**Assessor**: Zimmerman/Skipper

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
The organization shall establish, **implement** and maintain documented environmental objectives and targets, at relevant functions and levels within the organization.	X		
The objectives and targets shall be measurable, where practicable, and consistent with the environmental policy, including the commitments to prevention of pollution, **to compliance with applicable legal and other requirements to which the organization subscribes, and to continual improvement.**	X		
When establishing and reviewing its objectives **and targets**, an organization shall **take into account** the legal requirements and other requirements to which it subscribes, and its significant environmental aspects. It shall also consider its technological options, its financial, operational and business requirements, and the views of interested parties.	X		
The organization shall establish, **implement** and maintain (a) programme(s) for achieving its objectives and targets. Programme(s) shall include:	X		
a) designation of responsibility for achieving objectives and targets at relevant functions and levels of the organization; b) the means and time-frame by which they are to be achieved.	X?		
	X		

IMPLEMENTATION OF STANDARD:

Discussion: A signed, dated version of FY07 Environmental Objectives and Targets lab-level guidance was reviewed. This useful approach (which has since been adopted by PNNL), lists lab-level objectives and targets, and suggests organization level targets to enable flow down.

Performance improvements are evident: e.g., a reduction in the number of spills since FY04 was achieved; a concerted effort by C-AD and F&O resulted in significant reductions in the PCB inventory.

In order to determine whether FY07 objectives and targets had been established yet, each organization had to be queried individually, as this information is not tracked/stored/linked in one place. It was also difficult to assess the flow down of goals from the lab-level to the organization-level, as the language and linkage was not clear. The formats for documenting objectives and targets varied from organization to organization, which also made it more difficult to assess.

Some assessment plans seemed to contain verbiage that doesn't add value, and were hard to follow. An example of a plan that was fairly easy to follow was F&O's. Their end of year summary also clearly showed which items that had not been completed the previous year were carried over into the next FY.

In the plans reviewed, lead individuals are listed for each objective and target, but personnel resources outside of the organization (e.g., support from Waste Management Reps or F&O) were not consistently listed in all plans (e.g. BES). Some plans did list financial resources needed (e.g., FY07 F&O plan referred to the need for IHEM funding to complete one item).

The FY07 Performance Evaluation and Management Plan (PEMP) was completed and signed off before the end of FY06, and

the content was known in advance. Issuance of lab-level guidance on FY07 objectives and suggested organization-level targets did not occur until 11/13/06. The finalization of some organization-level plans was not timely, and no plans were completed before the budgeting process began. For example:

- FY06 Life Sciences plan for FY06 was not finalized until 1/10/06. FY07 Life Sciences plan was not finalized until 12/26/06.
- FY06 BES Plan was not signed off until 01/23/06. The FY07 BES plan was not complete at the time of the assessment.

Thus, the entire first quarter of the FY elapsed before objectives and targets were formalized. The FY07 F&O plan was done in a somewhat timelier manner (11/28/06). In spite of this, the line indicated that many activities are ongoing, and that they begin work on the objectives before the plan is formalized, so they indicated that this does not present a problem.

The Identification of Significant Environmental Aspects Subject Area does not specify a due date for an initial set of objectives and targets for the FY. It is understood that objectives and targets may be revised during the fiscal year as new information becomes available or circumstances change. The Presentation on Institutional Level Planning and Performance Management Cycle, 09/29/06, indicates that business plan reviews are conducted during the summer to "*review organizational performance for the current FY, to demonstrate alignment of organizational unit objectives with institutional priorities and performance expectations, and to determine appropriate resource allocation and trade-off decisions for FY+1 that may be necessary to execute the Annual Laboratory Plan.*" Under Corrective Action WBS1-3, the Integrated Planning Management System is working on refining and redefining the business planning processes with Laboratory performance objectives (schedule completion date 07/30/07)

One plan reviewed listed 17 objectives or tasks, another had 3. Some activities listed as "objectives" are really ongoing maintenance or measurement activities. For example, in the Physics plan, part of one goal was to inspect Satellite Accumulation Areas, which is already required by a Subject Area. Some objectives, such as "send a memo" are unlikely to result in real environmental improvements; however they may be part of a program to increase awareness. Some plans made a distinction between improvement objectives and ongoing maintenance or measurement activities. Some plans also indicated whether the objective applied to the Environment or Safety Management system or both. The BES plan did not have targets or measures for some objectives such as addressing stakeholder concerns: reviewing questions, and planning for future presentations. Perhaps these are really activities as opposed to objectives.

The status of a finding from the 04/06 internal audit - clarify procedure requirements for writing objectives and targets for all organizations with minor impacts (ESH&Q) – was not documented, and does not appear to have been addressed yet.

Two managers' "Management Goal Planning & Performance Appraisal" forms for the current FY were reviewed. They did not mention environmental protection, but did address safety, which is currently considered an area that need more improvement than the EMS.

Opportunities for Improvement:

1. Improve the timeliness, quality and focus of Objectives and Targets:

- (E and S): Institutional level guidance on environmental objectives was not issued until 11/13/06, and guidance on OSH objectives was not issued until 11/09/06. Some organization-level objectives were not finalized until January or February of 2007.
- (E) The Identification of Significant Environmental Aspects Subject Area does not specify the due date for an initial set of objectives and targets for the Fiscal Year (FY). Note: It is understood that objectives and targets may be revised during the fiscal year as new information becomes available or circumstances change.
- (E) In order to determine whether FY07 objectives and targets had been established yet, each organization had to be queried individually, as this information is not tracked/stored/linked in one place.
- (E) The status of a finding from the 04/06 internal audit - clarify procedure requirements for writing objectives and targets for all organizations with minor impacts (ESH&Q) – was not documented, and does not appear to have been addressed yet.
- (E) Some objectives are unlikely to result in real environmental improvements.
- (E) In a few cases, resources outside the organization needed to achieve an objective were not identified in Self-Assessment Plans.
- (E) The BES plan did not have targets or measures for some objectives, such as addressing stakeholder concerns: reviewing questions, and planning for future presentations.
- (E and S) Linkage to institutional level goals was not always clear, making it more difficult to assess flow down.
- (E and S) Different formats make the lists of objectives harder to review, and increase the likelihood that required information (like budget) will be missed.
- (E and S) Highlight improvement targets (1-3 meaningful environmental goals/year per organization), and group them under the relevant higher level objectives. Clearly distinguish between assessments and monitoring and maintenance vs.

improvement objectives. Indicate whether an objective is "E" or "S" or both.

Noteworthy Practices:

1. (E and S) C-AD and Plant Engineering have achieved dramatic reductions in PCB inventories.
2. (E and S) F&O prepared a useful, clear end of year status on their performance against their objectives and targets.
3. (E an S) F&O tracks the status of OSH and EMS objectives monthly in "Flash Reports" to management. This format targets problems areas for management attention.

Area suggested for further inquiry in future EMS audits: Evaluate tracking systems and linkage (indicating flow down) of lab and organization-level objectives and targets

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- FY07 Environmental Objectives and Targets, Supports ISO 14001 EMS, 11/13/06, Rev.0
- FY06 ES&H Objectives and Targets, Supports ISO14001 and OSHSAS 18001 Programs, 03/29/06, Rev.0
- LS-SAP-06, (Life Sciences) FY06 Self Assessment Plan, 1/10/06, Rev.1
- LS-SAP-07, (Life Sciences) FY07 Self Assessment Plan, 12/26/06, Rev.1
- Institutional Level Management Review PowerPoint slides, 12/15/05
- F&O Directorate ES&H Targets and Objectives for Fy2007, 11/28/2006
- F&O ES&H Targets and Objectives for Fy2006, End of year Status, 11/1/2006
- BES FY2006 Objectives and Targets, Rev.0, 01/23/06
- SBMS Procedure: Establishing and Implementing Environmental Objectives (effective date 4/15/2001)
- E&WMSD FY2007 Self Assessment Plan (12/12/06)
- E&WMSD FY2006 Self Assessment Plan (6/14/06)
- C-AD/SMD Environmental Management Program – objectives and targets (12/15/2006)
- EENS FY07 Objectives and Targets (2/2/07)
- List of FY07 EMS Objectives and Targets Supporting ISO 14001 EMS (11/13/06)
- NSLS Self Assessment Plan (12/31/2005)
- PowerPoint presentation, Institutional Level Planning and Performance Management Cycle, 09/29/06
- Carl Anderson, Dept. Chair, Management Goal Planning and Performance Appraisal form, FY05.
- ALD for ESH&Q Fy07 Performance Goals
- Annual Laboratory Plan – section on goals
- Draft BES FY07 Objectives and Targets, Rev.0
- Exit Readiness Evaluation Report, Buildings 901, 960, 560, Imaging Group Organizational Transfer to medical, from J Taylor to R Travis, 05/31/06

Environmental Management System Model			**IMPLEMENTATION AND OPERATION**	
ELEMENT:	4.4.1	**TITLE:**	*Resources, roles, responsibility and authority*	**Assessor**: Skipper/Zimmerman

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
Management shall **ensure the availability of** resources essential to **establish, implement, maintain and improve** the EMS. Resources include human resources and specialized skills, **organizational infrastructure,** technology and financial resources.	X		
Roles, responsibility and authority shall be defined, documented and communicated in order to facilitate effective environmental management.	X		
The organization's top management shall appoint a specific management representative(s) who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for	X		
a) ensuring that an EMS is established, implemented and maintained in accordance with this International Standard;	X		
b) reporting to top management on the performance of the EMS for review, **including recommendations** for improvement.	X		

IMPLEMENTATION OF STANDARD:
Discussion: The continuity of many EMS reps and ECRs has been good, providing consistency over time.

There has been a significant drop in spending for the EMS. Major efficiencies were achieved through the Data Quality Objective process, which reduced environmental monitoring to samples that were really needed based on risk and regulatory/permit requirements. The Pollution Prevention budget is zero for FY07. A request for some funding for this program, which offers a good return on investment and tends to stimulate and encourage the line organization, has been submitted. Several departments such as EENS have provided funding themselves for internal pollution prevention initiatives. The ALD for Life Sciences, Fritz Henn championed obtaining funding to disposition the 801 tanks.

The EMS Management Description does not indicate who (which position) the EMS Rep is, or where the EMS Reps' roles and responsibilities are documented. The new R2A2 document for George Goode, EPWMS manager, does contain the required language for EMS Representative roles and responsibilities.

PeopleSoft forms for performance goals and ratings include language on ES&H, e.g., *"Maintains hazard free workplace. Makes management are of any unsafe conditions, potential hazards and environmental concerns. Minimizes hazardous waste. Maintains initial and re-qualification training requirements."*

Opportunities for Improvement:

1. No seed money has been provided for Pollution Prevention for FY07. This funding provides a high return on investment and reduction in risk.
2. The Management System Description does not indicate that the EMS Management Rep is the EWMS Manager and that their roles are documented in their R2A2.

Noteworthy Practices:

1. Good technical support is provided to the line by Environmental Compliance Representatives. They are well integrated into organizations, are trusted, provide consistent answers, and are solution oriented.
2. The Data Quality Objective process for environmental monitoring focused limited resources on risk, saving hundreds of thousands of dollars.
3. (E and S) There are strong EMS and OSH representatives within the line who actively support and represent Divisions well. There has been continuity in their assignments.
4. (E and S) Several departments have funded pollution prevention and safety solutions for which lab funding was not available.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- R2A2 Profile Titles, part of SBMS R2A2 Subject Area, 12/15/04
- R2A2 ES&H Coordinator (11/05)
- R2A2 EMS Rep (11/2003)
- Craft 540, Pesticide Applicator, R2A2, O&M-004V, Rev.6, 11/1/03
- PeopleSoft, language for objectives (from Bob Kelly)
- R2A2, George Goode, 02/06/07
- R2A2, George Goode, 10/14/05
- Local Emergency Plan Information, medical Department, Building 490

Environmental Management System Model			**IMPLEMENTATION AND OPERATION**	
ELEMENT:	4.4.2	**TITLE:**	*Competence, Training and Awareness*	**Assessor**: Skipper/Zimmerman

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
The organization shall **ensure that any person(s) performing** tasks **for it or on its behalf that have the potential** to cause a significant environmental impact(s) **identified by the organization** is (are) competent on the basis of appropriate education, training or experience, and **shall retain associated records**.	X		

The organization shall identify training needs **associated with its environmental aspects and its EMS**. It shall provide training **or take other action to meet these needs,** and shall retain associated records.		X		
The organization shall establish, **implement** and maintain a procedure(s) to **persons working for it or on its behalf** aware of				
a) the importance of conformity with the environmental policy and procedures and with the requirements of the EMS;	a)	X		
b) the significant environmental impacts **and related** actual or potential impacts associated with their work, and the environmental benefits of improved personal performance;	b)	X		
c) their roles and responsibilities in achieving conformity with the requirements of the EMS, and	c)	X		
d) the potential consequences of departure from specified operating procedures.	d)	X		

IMPLEMENTATION OF STANDARD:

Discussion: A number of training records were pulled at random for various individuals. While some listed expired training, the ESH Coordinators/EMS Representatives indicated that these employees were either not onsite, or were not working in areas where this training was required, or that the training was not really needed. However, this determination relied on personal knowledge, as the Brookhaven Training Management System (BTMS) had not been updated to show that the employees were either inactive or not onsite, or to update the required training list. For example, a Custodian had required training LS-ESH-PESM, ESH Briefing for Plant Engineering/S&M listed as expired on 9/21/03, but the contact indicated that this was only required for custodians working at NSLS, and was added to all custodian's JTAs to resolve a union overtime concern. The BTMS printout for the Chemistry Dept. showed a number of individuals with expired training, but the EMS Rep indicated those people were not active onsite.

Contractor and visitor badges are scanned at the gate, which allows the Laboratory to determine whether these individuals have been onsite in the past 30 days, and thus whether their training should be up to date. The printout run for Feb 1-6, 2007 showed that 715 contractor and visitor badges had been scanned. The badges of visitors from other Laboratories with a DOE badge are not scanned.

Contractor/Vendor training is offered daily from 8:30 to 10:30. In the past, some researchers who are actually contractors have been directed to this training, but GET or other new employee training would be more appropriate, as the contractor/vendor training focuses on F&O type functions.

A number of environmental training courses are available: Training programs listed in the program description on general awareness include: Environmental Protection Course (for staff, computer-based training course); Contractor Vendor Orientation (for all contractors); ISO 14000 EMS Overview (for managers); General Employee Training (for short-term visitors, under two months). Specific Environmental Training (for select personnel) includes: Internal EMS Auditor; EMS Implementation; Hazardous Waste Generator; Radioactive Waste Generator; Emergency Responder (OSHA training series); Environmental Laws and Regulations; BNL Facility Specific Environmental Training; and Hazardous Waste Operations and Emergency Response.

New Supervisor training has also been provided personally by the EWMSD manager to 49% of existing managers. The training is a good introduction to what the EWMSD does (including services offered), the EMS, and the expectations and R2A2s for managers.

The 4/2006 internal audit noted that user training does not include consequences of departure from procedures at NSLS. The NSLS Job Specific Environmental Awareness Training for Photographic Darkroom Operations (revised 1/9/2007) now discusses both regulatory and environmental consequences of not managing waste correctly.

The auditors noted that several items in CBT training courses need to updated or clarified. Specifics are provided below.

GE-ENV-GET says that if you fail to report a spill, you may be held liable for noncompliance and face disciplinary action. It does not mention the environmental damage a spill could cause if it were not cleaned up.

TQ-EMS-3 (audits)

- Needs an updated screen shot of SBMS (the web page format has changed.)

- Delete the "zipped lip" picture, as someone might presume it means they're not supposed to talk about problems. (The intent of the graphic was to encourage people to instead to discuss problems with their management, and not babble, but it might be misinterpreted that people are discouraged from talking to a hotline, etc. if they feel their problem has not been addressed.)

TQ-EMS-1 (environmental overview)

- needs to be reviewed to ensure it is consistent with the updated ISO 14001:2004 standard. E.g., at least two clause numbers have changed - records is now 4.5.4 and audits are 4.5.5. Also there are actually 18 elements now, not 17 (as a clause on general requirements was added.)
- One of the test questions asks "what are the commitments in BNL's environmental policy?" The "correct answer" is pollution prevention, continual improvement etc. But one of the choices was something like E, S, H and S. Since the E policy is now just part of an ESSH policy, that question could be confusing.

Environmental protection is mentioned in both ISM training and stop work training (although the environmental example given could be improved. A good example from ORNL was a real incident, where an employee stopped work when she noticed a discharge from steam cleaning of a sidewalk without dechlorinatation.)

The safety course on Lyme Disease is an example of a course that is nice and clear, is in plain English, is not too wordy or boring, is easy to understand, and has good pictures. A trainee would feel like they learned something useful and relevant. While this is an easier topic to deal with than the topics covered in some of the other EMS-related training, one wonders how much regular staff or people with English as a second language take away the courses that are mostly words, or are more general in nature. The "Fish" posting indicating what chemicals can be disposed of down the drain is a good example of a training tool, as people can relate to the chemicals impacting fish downstream.

There was an incident where a fuel delivery truck driver spilled fuel onsite and left without reporting the incident. Drivers (who frequently changed) can easily be missed in a training program. As a result of this incident, BNL developed a "read and sign" training program that instructs drivers on what to do in the event of a spill.

Opportunities for Improvement:

1. Several Computer Based Training Programs should be updated, additional clarification added, and the content can be made more concise and relevant (e.g., GE-ENV-GET, spill consequences. TQ-EMS-1 should be reviewed for consistency with revised ISO 14001:2004 requirements. Contractor/Vendor training needs addition of "E" and Security, consequences, emphasis on pollution prevention, and some additional clarification.)
2. (E and S) Researchers who are contractors need to be directed to Guest Site Orientation/New Employee training instead of to Contractor/Vendor training.
3. (E and S) Guests from another lab are who are not onsite are often listed as active in BTMS, with expired training.

Noteworthy Practices:

1. The New Supervisor training provided by EWMS Division Manager is focused and relevant, and 49% of managers/supervisors have completed it. (Note: consider providing content to other managers.)
2. (E and S) A Read and Sign training was developed for fuel delivery drivers in response to a release.
3. (E and S) Some organizations have put controls in place to prevent people without appropriate training from conducting work (e.g., NSLS prox card access, C-AD LOTO signature, acceptance of waste by EWMSD)
4. (E and S) The Brookhaven Training Management System (BTMS) is a useful tool that allows supervisors to the training status of their workers and alerts them when qualifications or training have expired.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- Training on how to prepare objectives and targets at http://www.training.bnl.gov (TQ-EMS-2)
- GE-ENV-GET
- Stop Work Procedure (GE-STOPWORK)
- Environmental Management System Audits and Compliance Inspection How to Survive (TQ-EMS-3)
- Environmental Objectives and Targets (TQ-EMS-2)
- Environmental Management System ISO 14001 Overview (TQ-EMS-1)
- Work Planning and Control for Site Infrastructure Maintenance and operation (TQ-Workplan-MO)
- Work Planning and Control for S&T (TQ-Workplan-ST)
- ISM course – number?
- New Supervisor Training – EWMSD PowerPoint slides, 01/2007
- The NSLS Job Specific Environmental Awareness Training for Photographic Darkroom Operations (revised 1/9/2007)

- Contractor/Vendor Safety and Health Orientation Slides, Manual, and Script (1/8/2007)
- Outstanding Training Courses by Dept: Requirements for Wilkins, Wingrove, Custodian, 02/08/07
- Message from Rich DeRocher to E Zimmerman, 02/08/07
- Guests and Contractors that Accessed the Site from Feb 1-6, 2007 (printout, showing 715)
- ESH&S Briefing Checklist, 3.1/1i05e011.doc, 07/2004
- "Fish" posting of Sink Releasable Chemicals
- Introduction to life Sciences Directorate, PowerPoint Presentation
- Printout for TPL staff training status: Joseph O'Conor, Henry Schnakenberg, Slawko Kurczak. Also Walker Houten (guest), Sutter K, Sutter E, Scheffy (guest)

Environmental Management System Model			**IMPLEMENTATION AND OPERATION**	
ELEMENT:	4.4.3	**TITLE:**	*Communication (PARTIAL EVALUATION in F&O))*	**Assessor**: Skipper

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
With regard to its environmental aspects and EMS, the organization shall establish, **implement** and maintain a procedure(s) for: a) internal communication between the various levels and functions of the organization; b) receiving, documenting and responding to relevant communication from external interested parties. The organization shall **decide** whether to externally communicate about its significant environmental aspects, and shall document its decision. **If the decision is to communicate, the organization shall establish and implement a method(s) for this external communication.**	Partial evaluation		

IMPLEMENTATION OF STANDARD:
Discussion: F&O uses a form that people can use to report ESSH concerns. The title was recently revised to include ESSH, but the text only references safety.

Opportunity for Improvement:
1. The F&O ESH Concerns form does not mention "environment" in the text, although it does include it in the title.

Noteworthy Practices:
1. C-AD EMS website: C-AD Environmental Highlights 2006 contained many links to Frequently Asked Questions, past management reviews, and information on how to dispose of waste.
2. (E and S) The EENS Safety Newsletter provides an excellent forum for highlighting organization-specific E and S issues.
3. (E and S) F&O has a "ESH Concerns form" confidential form to report ES&H concerns.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED:
- C-AD Environmental Highlights 2006 (on C-AD EMS web page last revised 1/17/2007)
- C-AD Guidance on Community Involvement (7/31/2006)

Environmental Management System Model			**IMPLEMENTATION AND OPERATION**	
ELEMENT:	4.4.4	**TITLE:**	*(EMS) Documentation*	**Assessor**: Zimmerman/Skipper

ISO 14001 STANDARD:	**YES**		**PARTIAL**	**NO**
The EMS documentation shall **include**: **a) the environmental policy, objectives and targets,**	a)	X		
b) **description of the scope of the EMS**,	b)	X		

c) description of the main elements of the EMS and their interaction, and reference to related documents, **d) documents, including records, required by this International Standard, and** e) **documents, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental aspects.**	c)	X		
	d)	X		
	e)	X		

IMPLEMENTATION OF STANDARD:

Discussion: Laboratory and organization level program descriptions/manuals were reviewed. The F&O and Procurement & Property Management Program Description is a good example of line level documentation, as it focuses on implementation, contains a good list of organization-level documents use to implement the EMS, and does not repeat lab-level SBMS information.

The EENS Program Description contained a nice Matrix with columns for ISO requirement, BNL program (description and links) and then links for implementing requirements.

EPWMD is working to update the Lab-level Program Description.

Note: Several findings in the rest of this checklist relate to items that need to be documented in the Program Description (e.g., EMS Representative Roles, how BNL determines how its legal requirements apply to its aspects, etc.)

Noteworthy Practices:

1. The F&O program description focuses on implementation, and does not rehash institutional level information.
2. EENS and NSLS Program Descriptions include a table showing clear requirements flow down from the standard to the institutional level to the organization-level.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- SBMS Program Description: ISO 14001 Plus Environmental Management System Manual Effective Date: Jul 31, 2001
- EMS Description, Life Sciences Directorate, LS-EMSD, Rev.15, 05/26/06
- EMS Program, F&O and Procurement & Property Management, Rev.9, 06/01/2006
- BES EMS Description, Rev.3, 06/13/06
- Physics EMS Description (1/1/2007)
- Instrumentation Environmental Management Program and FY06 Plan (6/5/06)
- Instrumentation EMS Description (5/22/06)
- ESHQ EMS Description (6/17/05)
- EENS EMS Manual (6/06)
- EENS PAF #207 (2/13/06)
- EENS EMS Web Page (last revised 2/6/07)
- ER Environmental Management Program (9/13/06)
- NSLS EMS Manual (1/8/2007)

Environmental Management System Model			**IMPLEMENTATION AND OPERATION**	
ELEMENT:	4.4.5	**TITLE:**	*Control of documents (PARTIAL EVALUATION in F&O)*	**Assessor**: Zimmerman

ISO 14001 STANDARD:		**YES**	**PARTIAL**	**NO**
Documents required by the EMS and by this International Standard shall be controlled. Records are a special type of document and shall be controlled in accordance with the requirements given in 4.5.4.				
The organization shall establish, implement and maintain a procedure(s) to a) approve documents for adequacy prior to issue, b) review and **update** as necessary and **reapprove** documents, c) ensure that **changes** and the **current revision status** of documents are identified, d) ensure that **relevant** versions of applicable documents are available at points of	a)			
	b)			
	c)			
	d)			

use, e) ensure that documents remain legible and readily identifiable, f) ensure that documents of external origin determined by the organization to be necessary for the planning and operation of the EMS are identified and their distribution controlled, and g) prevent the unintended use of obsolete documents and apply suitable identification to them if they are retained for **any** purpose.	e)			
	f)			
	g)			

IMPLEMENTATION OF STANDARD:
Discussion: This element was evaluated in F&O. Note that a systemic nonconformity in this element has been identified at the institutional level, and is already being addressed via a corrective action plan –additional instances of problems are noted below.

F&O uses a red stamp for controlled forms, which says "Controlled, [#] This document will not be updated if this stamp is not in red."

Opportunities for Improvement:
1. (E and S) The Water Treatment Tanks Monthly Visual Inspection Checklist form does not have a form number or date.
2. (E and S) An out of date policy was posted at the Sewage Treatment Plant (corrected).
3. (E and S) Forms used in the Sewage Treatment Plan lacked an indication of revision status (e.g., date or revision number).

Noteworthy Practice:
1. (E and S) EP has an excellent Controlled Document methodology for its "Policy & Procedure Manuals," including a red ink stamp so people know copies with black and white stamps are not controlled.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED:
- Plant Engineering Environmental, Safety and Health Concern Form, Confidential, F&O-ESHTQ-GS-110A, Rev.1, 11/10/05 and form submitted by an employee (form dated 1999) submitted on 01/28/07
- ESS&H Policy, 04/19/04 (posted at Sewage Treatment Plant)

Environmental Management System Model			**IMPLEMENTATION AND OPERATION**	
ELEMENT:	4.4.6	**TITLE:**	*Operational Control (PARTIAL EVALUATION in F&O)*	**Assessor**: Zimmerman

ISO 14001 STANDARD:		**YES**	**PARTIAL**	**NO**
The organization shall identify **and plan** those operations that are associated with the identified significant environmental aspects consistent with its policy, objectives and targets, in order to ensure that they are carried out under specified conditions, by: a) establishing, **implementing** and maintaining a documented procedure(s) to **control** situations where their absence could lead to deviation from the environmental policy, objectives and targets; b) stipulating operating criteria in the procedure(s); c) establishing, **implementing** and maintaining procedures related to the **identified** significant environmental aspects of goods and services used by the organization and communicating applicable procedures and requirements to suppliers, including contractors.				
	a)			
	b)			
	c)			

IMPLEMENTATION OF STANDARD:
Discussion: The program to conform with EO 13101 (Environmentally Preferable Purchasing or EPP) requirements needs improvement. Progress has been slow. The problems, which are recognized by management, include:
- Deficient reporting. All necessary data is not collected or automated, although an effort to automate it is in progress. As a result, in 2006, BNL reported zero purchases for construction; non-paper office supplies like binders; vehicular supplies, and claimed there were no exemptions for cost, availability or performance.
- The E-pro procurement system only includes Fisher Scientific supplies (other EPP supplies are being added, and some are in the E-way system which is being phased out.)
- Lists in procedures need to be updated.
- Credit card training touches only lightly on the EPP requirements.

Note that periodic audits of credit card purchases are conducted. Each month they pick 5 card holders and look at all their transactions, and check 25 others at random.

A Safeguards & Security procedure on firearms contained good information on reporting sick and injured wildlife. The organizational reference for EWMSD was out of date (it listed SEP.)

The Process Assessment Form SE-535-WCT Live Fire Range did not note that Lead shot is the hazardous waste when disposed of (but it is not a waste until it is culled and it's not subject to requirements if recycled). It only listed lead as a recyclable metal.

Opportunities for Improvement:

1. The EO 13101 program (Environmentally Preferable Purchasing), needs improvement (e.g., reporting, procedures, procurement controls), and progress has been slow.
2. F&O should determine the cause of an unpleasant, chemical taste and smell in water from a dispenser in the cafeteria, and take appropriate actions to avoid recurrence.
3. Safeguards & Security should clarify on Process Assessment Form SE-535-WCT Live Fire Range that lead shot is the hazardous waste when disposed, but it is not a waste until it is culled and is not subject to requirements if recycled.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED :

- Water Treatment Tanks Monthly Visual Inspection Checklist for January 2007
- Job Plan Description hypochlorite tank, 1/29/07 and 02/02/07(equipment number 614F1-Tank04
- Process Assessment form SE-534-WCT, PEP ID#534, Weapons Cleaning Trailer (Trailer #TR334), Rev.4, 12/1/05
- Receiving Fuel Oil at the Central steam Facility, O&M-CSF-009, Rev.7, 03/1/06
- EP-ES&H-204, Plant Engineering, Pesticides, Rev.5, 03/09/06
- EP-ES&H-603, Plant Engineering, Waste Minimization, Accumulation and Disposal, Rev.9, 04/19/04
- Stationary Orders, slide from CBT training on Credit Cards.
- Action originated by procedure review, #8599, O&M WTF-011, Potable Water System Outage Procedure, etc. Status, no update required, closed 06/20/05
- Process Assessment Form SE-535-WCT, PEP ID 535, Life Fire Range/Grenade Range Building 574 Rev.4, 12/21/04
- Plant Engineering Work Order, EP186087, 09/27/07 finish date
- Chicago-Brookhaven National Laboratory FY2006 Data report on EO 13101 compliance
- Firearms SPO-402, Firearms Procedure Rev.18, 08/05.
- Process Assessment SE-534-WCT, Rev.4, 02/1/05

Environmental Management System Model			**CHECKING AND CORRECTIVE ACTION**	
ELEMENT:	4.5.2	**TITLE:**	*Evaluation of Compliance (PARTIAL EVALUATION of F&O)*	**Assessor**: Zimmerman

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
4.5.2.1 Consistent with its commitment to compliance, the organization shall establish, **implement** and maintain a procedure(s) for periodically evaluating compliance with **applicable legal requirements.**			
The organization shall keep records of the results of the periodic evaluations.			
4.5.2.2 The organization shall evaluate compliance with other requirements to which it subscribes. The organization may wish to combine this evaluation with the evaluation of legal compliance referred to in 4.5.2.1 or establish a separate procedure(s).			
The organization shall keep records of the results of the periodic evaluations.			

IMPLEMENTATION OF STANDARD:

Discussion: F&O conducted 265 Tier 1's in FY06. F&O determined they needed more support on Tier 1's. Numerous compliance evaluations involving F&O are conducted by EPWS, for compliance with air, water and sewage treatment permit conditions. So far during FY07, the F&O ECR has been involved in more Tier 1's.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED: None

Environmental Management System Model			**CHECKING AND CORRECTIVE ACTION**	
ELEMENT:	4.5.4	**TITLE:**	*Control of Records (Partial Evaluation in F&O))*	**Assessor**: Zimmerman

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
The organizational shall establish and maintain records as necessary to demonstrate conformity to the requirements of its EMS and of this International Standard, and the **results achieved.**			
The organization shall establish, **implement** and maintain a procedure(s) for the identification, **storage, retrieval, retention** and disposal of environmental records.			
Environmental records shall be **and remain** legible, identifiable, and traceable.		X	

IMPLEMENTATION OF STANDARD:

Discussion: On 2/04/06, an inspection report indicated that a high level alarm for hypochlorite tank in Water Treatment Plant was not operational. This problem was prioritized on a work order as a "2" (requiring that it be addressed within 24 hours). There was verbal indication that the alarm was repaired by electrician line crew on same day under a generic work permit, but no documentation and the Work Order was NOT closed out. The 01/29/07 form showed that the high level alarm was functional.

Minor Nonconformity:

1. An F&O inspection in December 2006 determined that the high level alarm for hypochlorite tank in Water Treatment Plant was not operational. A work order was put in requiring correction within 24 hours, and there was verbal indication that the alarm was repaired, but no documentation (i.e., the work order was not closed out).

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED:

- WTP Inspection Report for 12/04/06 and related work order.
- WTP Inspection Report for 01/29/07

Environmental Management System Model			**CHECKING AND CORRECTIVE ACTION**	
ELEMENT:	4.5.5	**TITLE:**	*Internal (EMS) Audit (PARTIAL EVALUATOIN)*	**Assessor**: Zimmerman

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
The organization shall **ensure that internal audits of the EMS are conducted at planned intervals to**			
a) determine whether the EMS			
1) conforms to planned arrangements for environmental management including the requirements of this International Standard, and			
2) has been properly implemented and is maintained; and			
b) provide information on the results of audits to management.			
Audit programme(s) shall **be planned, established, implemented and maintained** by the organization, taking into consideration the environmental importance of the operation(s) concerned and the results of previous audits.			
Audit procedure(s) shall be established, **implemented** and maintained that address			
- responsibilities and requirements for **planning and** conducting audits, reporting results, and retaining associated records,			
- the determination of audit **criteria**, scope, frequency and methods.			
Selection of auditors and conduct of audits shall ensure objectivity and the impartiality of the audit process.			

IMPLEMENTATION OF STANDARD:
Discussion: It should be noted that BNL is not required to audit all 18 elements in all Directorates every three years. While their procedure does require that all 18 elements be covered over a three year time period, it is acceptable to sample various organizations. Generally, audit programs focus on areas where there are problems, high risks, or the status is not well understood, new requirements/processes/corrective actions implemented, or areas that have not been audited recently.

Internal EMS audit Opportunities for Improvement from the 04/06 internal EMS audit were not tracked. As a result, the status of these opportunities is not clear.

Opportunity for Improvement:
1. Opportunities for Improvement identified in the 04/06 internal audit were not tracked.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED:
- Internal EMS/OHSAS Surveillance Audit, 06/19-23/06, Corrective Action Plan, 07/21/06
- Final Report, 2006 Internal Assessment of BNL EMS, 04/11/06
- ATS Printout of Assessment #3184, 02/06/07

Environmental Management System Model			**MANAGEMENT REVIEW**		
ELEMENT:	4.6	**TITLE:**	*Management Review*	**Assessor**: Zimmerman/Skipper	

ISO 14001 STANDARD:	**YES**	**PARTIAL**	**NO**
Top management, shall review the organization's EMS, at planned intervals, to ensure its continuing suitability, adequacy, and effectiveness.	X		
Reviews shall include **assessing opportunities** for improvement and the need for changes to the EMS, including the environmental policy, objectives and **targets**.	X		
Records of the management reviews shall be retained.	X		
Inputs to management reviews shall include		X	
a) results of internal audits **and evaluations of compliance with legal requirements and with other requirements to which the organization subscribes,**	a)	X	
b) communication(s) from external interested parties, including complaints,	b)	X	
c) the environmental performance of the organization,	c) X		
d) the extent to which objectives and targets have been met,	d) X		
e) status of corrective and preventive actions,	e)	X	
f) follow-up actions from previous management reviews,	f)	X	
g) changing circumstances, **including developments in legal and other requirements related to its environmental aspects, and**	g)	X	
h) recommendations for improvement.	h) X		
The outputs from management reviews shall include any decisions and actions related to possible changes to the environmental policy, objectives, targets and other elements of the EMS, consistent with the commitment to continual improvement.	X		

IMPLEMENTATION OF STANDARD:
Discussion: Two SBMS procedures exist on Management Reviews: the Environmental Assessments Subject Area (for EMS Management Reviews) and OSHAS Interim Procedure 2004-18001-007 (for combined EMS and OSHAS reviews). Since both are in effect, this could lead to some confusion among staff as to which procedure should be followed. Some staff interviewed stated that they tried to follow both procedures. Neither procedure clearly specifies all input/content required by ISO 14001:2004.

The Environmental Assessments Subject Area has not been revised since issuance of ISO 14001:2004. It specifies the following

management review content "as applicable":

- *Assessment results (summarizing types of findings and causal factors with emphasis on corrective actions, and their effectiveness), including*
  - *EMS Assessment results;*
  - *Regulatory Compliance Assessments;*
  - *Environmental Management Reviews;*
  - *External Assessment results.*
- *Expectations/concerns associated with environmental activities expressed by internal or external stakeholders;*
- *EMS improvements and benefits;*
- *Pollution prevention initiatives -- investments and returns on investment;*
- *Effluent/emission monitoring data summaries (air, water, waste);*
- *Environmental occurrences, spills, and/or unexpected releases;*
- *Environmental objectives, performance measures, and performance data;*
- *Identified regulatory noncompliances, violations and/or enforcement actions;*
- *Environmental program costs and benefits;*
- *Evaluation of adequacy suitability and effectiveness of EMS Program;*
- *Recommended improvement areas.*

This list does not specifically include content from ISO 14001:2004:

i) ***status of corrective and preventive actions*** (although there is reference in Step 2 to trends in assessment results and compliance status and root causes of systematic noncompliance, and assessment results)

j) follow-up actions from previous management reviews,

k) *changing circumstances,* ***including developments in legal and other requirements related to its environmental aspects*** (although there is reference to continued suitability of objectives and targets in light of changes in environmental impacts and concerns under Step 4.)

Probably due to the multiple procedures and lack of clarity on required content/input, several organization-level management reviews did not cover all of the ISO 14001:2004 requirements.

Examples of areas not clearly covered (documented) in last round of management reviews were:

- communication from external parties (C-AD)
- changing environmental circumstances or requirements (Physics, C-AD)
- Follow-up on EMS actions from previous management reviews (C-AD)
- External regulatory compliance audit results (Physics, Magnet, C-AD, ER)

Some of these areas may not have been applicable (for example – perhaps there were no external regulatory assessments during the FY) but this is not clear in the management review documentation.

Note: A combined Preparing for and Conducting EMS and OSH Management Reviews SBMS procedure is in draft form. The draft was reviewed, and clearly lists all required management review inputs/content.

Last year the SMD Management Review was held in February. This year it was held at the end of January.

The FY06 Instrumentation Management Review was not conducted in the time frame indicated in their Program Description.

Minor Nonconformity:

- Two procedures on Management Reviews (Environmental Assessments Subject Area and ISMS Interim Procedure 2004-18001-007) are in effect, but neither clearly specifies all inputs/content required by ISO 14001. It was not clear from documentation (slides and minutes) that all required elements were either covered/not applicable (this issue was identified in 04/06 internal audit, not addressed yet).

Opportunities for Improvement:

Site level

1. The Institutional level FY06 and FY07 Management Review was conducted on December 18, 2006, but the Record of Decision has not been completed, and the minutes (which were completed on December 20) have not been distributed yet. The need to collect all senior management inputs and obtain signatures on the Record of Decision delays document finalization.
2. (E and S) When EMS and OHSAS reviews are combined, clarify in the discussion and minutes whether concerns or

actions apply to E, S or both, to help determine appropriate actions and owners.

3. (E and S) Encourage conducting the organization level reviews prior to the conducting the institutional level Management Review.
4. (E and S) In advance of the Management Review, request input from management on desired focus areas.

Organization-level:

5. (E and S) The SMD Management Review was not completed until 1/30/06. The minutes were not posted on their web site at the time of the audit.
6. (E and S) The FY06 Instrumentation Management Review was not conducted in the time frame indicated in their Program Description.
7. (E and S) The due date (e.g. in the PEMP) for Management Reviews should allow sufficient time to gather data and report on end of FY performance.

Noteworthy Practices:

1. There is clear evidence of continual improvement in response to feedback from Management Reviews and lessons learned.
2. (E and S) Organization and institutional level EMS Management Reviews are seen as useful, interesting and valuable by management.

EXISTING PROCEDURES AND DOCUMENTATION REVIEWED

- EMS Institutional-level Management Review, 12/18/2006, PowerPoint slides
- ISO 14001 EMS Lab wide Management Review FY06 Environmental Issues Summary, 12/18/06, Rev.1
- Institutional Level Management Review PowerPoint slides, 12/15/05
- Life Sciences management Review, PowerPoint slides, 09/25/06
- F&O and Procurement & Property Management, FY2006 ES&H Management Review, PowerPoint slides, 09/07/2006
- F&O FY 2006 ESH Management Review Minutes, 09/07/2006
- BES ESH Management Review FY 2006, PowerPoint slides, 11/07/2006
- Minutes of GBES OSH/EMS Fy2006 Management Review, 11/21/2006
- SBMS Environmental Assessments Subject Area, Step 5, Preparing for and Conducting Environmental Management Reviews 06/15/2001
- Record of Decision, EMS/OSH Management Review, 12/15/2005, completed 03/15/2006
- Physics Management Review (10/9/2006)
- Physics Management Review Minutes (10/9/2006)
- SBMS Interim Procedure: Integrated Management Review (revision 8 1/26/07)
- SBMS Procedure: Preparing and Conducting Environmental Management System Reviews (effective date 6/15/2001)
- Instrumentation EMS Management Review (12/06)
- Instrumentation EMS Management Review Minutes (12/17/06)
- ESHQ Management Review (9/18/2006)
- ESHQ Management Review Meeting Minutes, Draft dated 9/18/2006
- EENS Management Review (11/17/2006)
- EENS Management Review Minutes (11/17/2006)
- ER Management Review (9/21/06)
- NSLS Management Review (12/21/2006)
- NSLS Management Review Minutes (12/21/2006)
- Draft unsigned FY06 EMS Management Review Record of Decision, 02/05/07

CATEGORIZATION OF FINDINGS:

- **Nonconformity**: Objective evidence exists that a requirement has not been addressed (intent), a practice differs from the defined system (implementation) or the system is not effective (effectiveness). numbering system: ISO 14001 clause - date of audit (month year) – sequential number. For example, the first nonconformity with clause 4.3.2, identified on 8/22/01 would be numbered 4.3.2-0801-01.
  - **Major nonconformity**: A system element is missing, or there is evidence that a system element is not implemented or not effective. Multiple minor nonconformities may be grouped together as a major if they are all examples of the same type of nonconformity.
  - **Minor nonconformity:** A single observed discrepancy in the system, with evidence that the overall system is defined, implemented, and effective.
- **Opportunity for Improvement/Recommendation**: Not a nonconformity, but it is possible that it could lead to a nonconformity if allowed to continue uncorrected. It could be an existing condition without adequate supporting evidence to verify that it constitutes a nonconformity. Or it could be a suggested means of accomplishing an activity, fulfilling the intent of a procedural requirement, or improving the efficiency or effectiveness of the EMS. It is not a nonconformity or observation. A recommendation involves an element that meets the minimum ISO 14001 requirements, but could bring that element of the EMS to the next level, as part of continual improvement.
- **Noteworthy Practice**: Performance that exceeds expectations in terms of efficiency and/or effectiveness and provides a model for others to follow. A noteworthy practice is a positive condition or strength.

The suggested next step is to review the report, prioritize the findings, and develop a strategy for addressing them, and track them in a system. Follow up on Nonconformities and Observations that have not already been adequately addressed is expected. **Note that corrective action shall be applied to the identified concern/issue. Preventive action shall be extended to all areas where similar nonconformities may exist and as applicable.**

Tracking high priority Opportunities for Improvement/Recommendations to closure is also suggested.

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

Organization Assessed: **Brookhaven National Laboratory**

Location: Upton, NY

Scope: 4.2 OSH policy, 4.3.1, Planning for hazard identification, risk assessment and risk control, 4.3.2 Legal & other requirements, 4.3.3Objectives, 4.4.1 Structure and Responsibility, 4.4.2 Training, awareness and competence, and 4.6 Management review.

Audit Plan: N/A (utilized the EMS plan – see Attachment E).

Dates of Record Review: **February 5-9, 2007**

Dates of Onsite Evaluation: **February 5-9, 2007**

Lead OHSAS Assessor: Robert Selvey, CIH Lead (OSH)
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Note: This OSH audit was combined with an ISO 14001:2004 audit. The two EMS auditors were Elizabeth Zimmerman and David Skipper. Their findings are documented in a separate checklist – see Attachment C-1.

Report Distribution:

- **Draft**: OSH Management Representatives, OSH Points of Contact, ESH Coordinators, Owners and individuals directly affected by findings, others who need to review for factual accuracy.
- **Final**: **[**Recommended distribution to environmental protection program managers, ESHQ Managers, Management System Owners, line organizations affected by findings (including noteworthy practices); Executive Summary to Level 1's and 2's, make full report available online.]

Status of Assessment Report:

• Draft for review and comment	Date 02/28/07	Revision Number: 0
• X Final	Date 03/11/07	Revision Number: 0

Note: The following organizations were audited/reviewed for this assessment: (All BNL): Instrumentation Division , ESH&Q & Support Organizations, Facility and Operations, Physics Department; Life Sciences Directorate, Collider Accelerator Department/ Super Conducting Magnet Division, EENS Directorate, Basic Energy Science Directorate, Environmental Restoration Project Office, NSLS Department.

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

OHS Management System Model			GENERAL REQUIREMENTS	Auditor: Bernholc/Selvey
ELEMENT:	4.1	TITLE:	**General Requirements**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
The organization shall establish and maintain an OSH management system, the requirements of which are set out in Clause 4 of OHSAS 18001-1999.			X

FACILITY IMPLEMENTATION OF STANDARD:
BNL's OSH has been registered to the OHSAS 18001 standard since 2006 and certain organizations as early as 2004. The scope of BNL's OSH registration is identified on their registration certificate as including all facilities, experiments, and operations managed by Brookhaven Science Associates at Brookhaven National Laboratory in accordance with the OSH. The BNL OSH Manual notes that the DOE Brookhaven Group and the NOAA weather station are not included within the scope of the Laboratory-wide registration.

Overall the system meets the intent of the standard, has all required elements, and is in the process of being internalized into operations at BNL. It is being maintained at the site and line organization level. There is clear evidence of continual improvement. As expected, there is additional room for improvement.

There appear to be opportunities to integrate OHSAS with EMS, to eliminate certain line organization documents in favor of site level programs, and to provide better guidance on certain elements such as records and document.

EXISTING PROCEDURES AND DOCUMENTATION:

- Occupational Safety and Health (OSH) (Pilot for OHSAS 18001) Program Description, 2004, https://sbms.bnl.gov/sbmsearch/subjarea/66/66_Pro2.cfm
- Management System Description: Occupational Safety and Health (OSH) (Pilot for OHSAS 18001) Effective Date: 06/04/04, https://sbms.bnl.gov/sbmsearch/subjarea/66/66_Pro1.cfm

EVALUATION:

MEETS REQUIREMENT	MINOR NONCONFORMANCE	MAJOR NONCONFORMANCE
X		

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Management System Model			OS&H POLICY	Auditor: Bernholc/Selvey
ELEMENT:	4.2	TITLE:	**OSH Policy**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
There shall be an occupational health and safety policy authorized by the organization's top management that clearly states overall health and safety objectives and a commitment to improving health and safety performance.			X
The policy shall :			
a) be appropriate to the nature and scale of the organization's OSH risks;			X
b) include a commitment to continual improvement;			X
c) include a commitment to at least comply with current applicable OSH legislation and with other requirements to which the organization subscribes;			
d) be documented, implemented and maintained;			X
e) be communicated to all employees with the intent that employees are made aware of their individual OSH obligations;			X
f) be available to interested parties; and			X
g) be reviewed periodically to ensure that it remains relevant and appropriate to the organization.			X

FACILITY IMPLEMENTATION OF STANDARD:

There is a link to the ESSH policy in the site index on the Internet at http://www.bnl.gov/bnlweb/site_map.asp , and a link from department/directorate home pages, and the SBMS BNL policies page at https://sbms.bnl.gov/policies.cfm#4, but not the ESH&Q Directorate home page at http://www.bnl.gov/ESHQ/main_e.asp or the SHSD web page at http://www.bnl.gov/esh/shsd/ . When asked, some people could not locate the ESSH policy on the Intranet.

The policy is communicated to all employees through Laboratory-wide mailings, training programs, publications such as the BNL Bulletin, and as noted above, is available via several links on the BNL Web site. Specialized training programs such as Contractor/Vendor Training and GET that are provided to short-term staff also address the policy.

In an effort to ascertain whether non-staff understand the policy, five Post Docs, four Contractors, and two Guests were interviewed. Most understood the commitments in policy. All demonstrated an understanding of relevant hazards and controls. One contractor (and office person) did not know about calling x2222 in the event of a spill.

Noteworthy Practice: EENS has developed a list of locations where it places copies of the policy. It is controlling the posting of policy and other ESH Information in this way.

EXISTING PROCEDURES AND DOCUMENTATION:

- ESS and H Policy, 09/06/2006 (no revision number.)
- ESS&H Policy, 04/19/04
- BNL website at www.bnl.gov
- Monday Memo, Volume 9, Number 3, 02/05/07 Director's Message

EVALUATION:

MEETS REQUIREMENT	MINOR NONCONFORMANCE	MAJOR NONCONFORMANCE
X		

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Management System Model			PLANNING	Auditor: Bernholc/Selvey
ELEMENT:	4.3.1	TITLE:	**Planning For Hazard Identification, Risk Assessment And Risk Control**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
The organization shall establish and maintain procedures for the ongoing identification of hazards, the assessment of risks, and the implementation of necessary control measures. These shall include: a) routine and non-routine activities; b) activities of all personnel having access to the workplace (including subcontractors and visitors); c) facilities at the workplace, whether provided by the organization or others.			X
The organization shall ensure that the results of these assessments and the effects of these controls are considered when setting its OSH objectives. The organization shall document and keep this information up to date.		X	
The organization's methodology for hazard identification and risk assessment shall: a) be defined with respect to its scope, nature and timing to ensure it is proactive rather than reactive; b) provide for the classification of risks and identification of those that are to be eliminated or controlled by measures as defined in 4.3.3 and 4.3.4; c) be consistent with operating experience and the capabilities of risk control measures employed; d) provide input into the determination of facility requirements, identification of training needs and/or development of operational controls; e) provide for the monitoring of required actions to ensure both the effectiveness and timeliness of their implementation.			X
NOTE For further guidance on hazard identification, risk assessment and risk control, see OHSAS 18002.			

FACILITY IMPLEMENTATION OF STANDARD:

- All organizations have developed JRAs and FRAs. It was identified that both Managers and workers participate in the development.
- Physics Department has incorporated the JRA into their Experimental Safety Reviews (ESRs).
- EENS posts ESRs in laboratories.
- Life Sciences and BES provide links to JRAs in their ESRs.

Chemistry Department Priority of Job Risk Assessments links both JRA and ESRs. Similar table for Facility Risk assessments.

EXISTING PROCEDURES AND DOCUMENTATION (LIST):
https://sbms.bnl.gov/sbmsearch/subjarea/109/109_SA.cfm?parentID=109 SBMS subject are: Work Planning and Control for Experiments and Operations
Review of selected JRAs and FRA in reviewed departments, including:

- Life Sciences OHSAS JRA Manual Lifting (of loads of about 50 pounds or less). Rev 0; 10/11/06
- Life Sciences OHSAS JRA Work with Laboratory chemicals DJ-JRA17 9/30/06
- Life Sciences Priority of Facility Risk Assessments. Updated 10/10/2006
- Life Sciences Priority of Job Risk Assessments.
- Life Sciences OHSAS FRA DJ-FRA08-bld 421.
- Life Sciences OHSAS JRA Machine shop use DJ-JRA-12-Machine Shop. 1/31/06
- CA JRA 16-07 Working with Hazardous Materials. Jan 5, 2007 Rev # 2.Change Mercury Bulb Crusher Bag filter, and crush fluorescent bulbs.
- Chemistry Department Priority Of Job Risk Assessments 2/2/2007

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

• Condensed Matter Physics and Material Handling Web page • EENS List of Non-Standard Ventilation Sources vented to outside - Developed as a result of 851 Gap analysis		
EVALUATION: The FRAs and JRAs of EWMSD are not being reviewed in a cycle sufficient for 1/3 per year. This does meet the requirement in the OHSAS Interims Procedure on JRAs and FRAs and the intent of the OHSAS specifications.		
MEETS REQUIREMENT	MINOR NONCONFORMANCE X	MAJOR NONCONFORMANCE

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Management System Model			PLANNING	Auditor: Bernholc/Selvey
ELEMENT:	4.3.2	TITLE:	**Legal and Other Requirements**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
The organization shall establish and maintain a procedure for identifying and accessing the legal and other OSH requirements that are applicable to it.			X
The organization shall keep this information up-to-date. It shall communicate relevant information on legal and other requirements to its employees and other relevant interested parties.			X

FACILITY IMPLEMENTATION OF STANDARD:

Departments either subscribe to SBMS for updates and to follow through in their departments. ESH&Q and Emergency Services track regulatory drivers at a site level.

ESH&Q, Emergency Services has a documented mechanism in place on how to perform these functions for requirements not covered by the SBMS notification process for DOE orders.

Currently there is a staff shortage within SHSD to consistently perform these reviews of OSHA, NFPA, and ANSI drivers and ensure site level documentation is updated.

EXISTING PROCEDURES AND DOCUMENTATION:

- Brookhaven National Laboratory SBMS Interim Procedure Interim Procedure Number 2004-18001-005 Procedure Number: 2004-18001-003 Revision: 9 on 1/26/07 Title: Legal and Other Requirements
- Subject Area: Requirements Management, Effective Date: 01/22/07
- SE50700, Safety Engineering Requirements Management, Rev 0, 10/03/06
- IH50700, Industrial Hygiene Requirements Management , Rev 4, 01/12/07

EVALUATION:

MEETS REQUIREMENT	MINOR NONCONFORMANCE	MAJOR NONCONFORMANCE
X		

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Management System Model			PLANNING	Auditor: Bernholc/Selvey
ELEMENT:	4.3.3	TITLE:	**Objectives**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
The organization shall establish and maintain documented occupational health and safety objectives, at each relevant function and level within the organization. NOTE Objectives should be quantified wherever practicable. When establishing and reviewing its objectives, an organization shall consider its legal and other requirements, its OSH hazards and risks, its technological options, its financial, operational and business requirements, and the views of interested parties. The objectives shall be consistent with the OSH policy, including the commitment to continual improvement.			X

FACILITY IMPLEMENTATION OF STANDARD:
Site level OSH objectives were prepared with line input and distributed on 11/09/06. These were used to flow down objectives and targets to line organizations.

All organizations have OSH Objectives, although some had not updated them for FY07 at the time of the audit.

EXISTING PROCEDURES AND DOCUMENTATION:
- SBMS Interim Procedure: 2004-18001-006 OSH Objectives/Targets
- SBMS Procedure: Establishing and Implementing Environmental Objectives (effective date 4/15/2001)
- Site Level List of FY07 OSH Objectives and Targets Supporting OHSAS 18001, 11/09/06.

Some of the reviewed Objectives of line organizations:
- LS-SAP-07, (Life Sciences) FY07 Self Assessment Plan, 12/26/06, Rev.1
- F&O Directorate ES&H Targets and Objectives for FY07, 11/28/2006
- E&WMSD FY07 Self Assessment Plan (12/12/06)
- C-AD/SMD Environmental Management Program – objectives and targets (12/15/2006)
- EENS FY07 Objectives and Targets (2/2/07)
- NSLS Self Assessment Plan 06/16/06.
- BES FY07 Objectives and Targets, Rev.0

COMMENTS:
- SHSD and OSH Representatives are in the process of reformatting and restructuring OSH Objectives to make them more measurable.
- The site level OSH Objectives need to be issued in July- August so that they are available to line organizations prior to the start of the fiscal year. (OFI).

EVALUATION:

MEETS REQUIREMENT	MINOR NONCONFORMANCE	MAJOR NONCONFORMANCE
X		

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Management System Model			IMPLEMENTATION AND OPERATION	Auditor: Bernholc/Selvey
ELEMENT:	4.4.1	TITLE:	**Structure and Responsibility**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
The roles, responsibilities and authorities of personnel who manage, perform and verify activities having an effect on the OSH risks of the organization's activities, facilities and processes, shall be defined, documented and communicated in order to facilitate OSH management.			X
Ultimate responsibility for occupational health and safety rests with top management.			X
The organization shall appoint a member of top management (e.g. in a large organization, a Board or executive committee member) with particular responsibility for ensuring that the OSH management system is properly implemented and performing to requirements in all locations and spheres of operation within the organization.			
Management shall provide resources essential to the implementation, control and improvement of the OSH management system.			X
NOTE Resources include human resources and specialized skills, technology and financial resources.			
The organization's management appointee shall have a defined role, responsibility and authority for:			X
a) ensuring that OSH management system requirements are established, implemented and maintained in accordance with this OHSAS specification;		X	
b) ensuring that reports on the performance of the OSH management system are presented to top management for review and as a basis for improvement of the OSH management system.			X
All those with management responsibility shall demonstrate their commitment to the continual improvement of OSH performance.			X

FACILITY IMPLEMENTATION OF STANDARD:

- For the most part, roles and responsibilities for safety are reflected in the R2A2s and goals for the individuals.
- Individuals interviewed were knowledgeable of their roles.
- At the site level, the OHSAS 18001 is not resources adequately to ensure the conversion of interim procedures into new permanent subject areas, document control, records management, integration with EMS, and direction of the S2 and S3 program without significant impact on the SHSD program areas and supervision of staff. This directly impacts key activities such as requirement management, self assessment of OSH programs, and effective supervision of the Safety & Health Representative program.

EXISTING PROCEDURES AND DOCUMENTATION:

- Management System: Human Resources; Subject Area: Roles, Responsibilities, Accountabilities, and Authorities (R2A2); Effective Date: Dec 15, 2004

COMMENTS:

- Spotlight awards are given for OSH activities by several departments/divisions
- EENS and BES have used their own resources to fund Safety Solutions (S2) initiatives.

EVALUATION: The Site Level OHSAS program manager is a loaned resource from SHSD Industrial Hygiene and the OHSAS program is not fully funded for this function. (minor nonconformance)

MEETS REQUIREMENT	MINOR NONCONFORMANCE	MAJOR NONCONFORMANCE
	X	

ATTACHMENT C-2

BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Management System Model			IMPLEMENTATION AND OPERATION	Auditor: Bernholc/Selvey
ELEMENT:	4.4.2	TITLE:	**Training, Awareness and Competence**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
Personnel shall be competent to perform tasks that may impact on OSH in the workplace. Competence shall be defined in terms of appropriate education, training and/or experience. The organization shall establish and maintain procedures to ensure that its employees working at each relevant function and level are aware of: a) the importance of conformance to the OSH policy and procedures, and to the requirements of the OSH management system; b) the OSH consequences, actual or potential, of their work activities and the OSH benefits of improved personal performance; c) their roles and responsibilities in achieving conformance to the OSH policy and procedures and to the requirements of the OSH management system, including emergency preparedness and response requirements (see 4.4.7); d) the potential consequences of departure from specified operating procedures.			X
Training procedures shall take into account differing levels of: a) responsibility, ability and literacy; and b) risk.			X

FACILITY IMPLEMENTATION OF STANDARD:

- Most departments/divisions have an aggressive program to insure that personnel maintain their training requirements.
- The Brookhaven Training Management System (BTMS) is a successful tool that allows supervisors to know the training status of their workers. It also alerts supervisors when a workers' qualification and training have expired. The audit did not detect problems of untrained or unqualified workers performing work.
- A training need gap was identified for lockout Tagout. The available options for training do not match well with the needs of small science experimenters. The site level training programs need to be split to make more tailored options available.

EXISTING PROCEDURES AND DOCUMENTATION:

- Management System: Training and Qualifications, Subject Area: Training and Qualifications, Effective Date: 02/15/04.

COMMENTS:

EVALUATION:

MEETS REQUIREMENT	MINOR NONCONFORMANCE	MAJOR NONCONFORMANCE
X		

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BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Management System Model			MANAGEMENT REVIEW	Auditor: Bernholc/Selvey
ELEMENT:	4.6	TITLE:	**Management Review**	

OHSAS 18001 STANDARD:	NO	PARTIAL	YES
The organization's top management shall, at intervals that it determines, review the OSH management system, to ensure its continuing suitability, adequacy and effectiveness. The management review process shall ensure that the necessary information is collected to allow management to carry out this evaluation. This review shall be documented.			X
The management review shall address the possible need for changes to policy, objectives and other elements of the OSH management system, in the light of OSH management system audit results, changing circumstances and the commitment to continual improvement.			X

FACILITY IMPLEMENTATION OF STANDARD:
Line organization and site level OSH Management Reviews were conducted in 2006. The content of the Management Reviews was acceptable. Senior Managers of line organizations and BNL indicated that the OSH reviews are valuable and successful in presenting the needed information.

EXISTING PROCEDURES AND DOCUMENTATION:

- SBMS Interim Procedure: 2004-18001-007, Rev 8, 1/26/07, Integrated Management Review.
- Site level and line organization's FY
- 06 OSH management reviews.

COMMENTS:

- The format of the site OSH Management Review should be altered to increase the discussion. The planners of the FY07 site level management review should consider changes to the presentation style, list of invitees, room configuration, and pre-meeting handouts to improve the level of discussion on key issues.

Each of the line organization management reviews were attended and audited by SHSD, including:

- EENS Management Review Meeting Presentation and Minutes– September 28, 2006
- FY06 Self Assessment Safety and Health Program Review Artie Piper OSH/EMS Management Representative ESH Coordinator January 30, 2007.
- Life Sciences EMS/OHSAS & Operations Management Review September 28, 2006
- Life Sciences Operations Management Review, September 25, 2006
- BES Directorate FY 2007 Self-Assessment Plan January 05, 2007
- Instrumentation
- ESH&Q Directorate EMS/OSH FY06 Management Review
- Support Organizations OSH Management Review FY06
- Environmental Restoration Project OSH/EMS FY06 Management review.
- NSLS FY06 OSH/EMS Management Review

EVALUATION:

MEETS REQUIREMENT	MINOR NONCONFORMANCE	MAJOR NONCONFORMANCE
X		

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BNL OHSAS 18001 Internal Audit Checklist 2007

OSH Documents Reviewed

Site Level Documents

- SBMS Subject Area: *Exhaust Ventilation*
- SBMS Subject Area: *SBMS Documents*
- SBMS Subject Area: *Requirement Management*
- SBMS Subject Area: *Hazard Analysis*
- SBMS Subject Area: *R2A2*
- Brookhaven National Laboratory SBMS Interim Procedure Interim Procedure Number 2004-18001-005 *Audit Checklist* Revision 13 1/26/07.
- Brookhaven National Laboratory SBMS Interim Procedure Interim Procedure Number 2004-18001-005 Procedure Number: 2004-18001-003 Revision: 9 on 1-26-07 Title: *Legal and Other Requirements.*
- Brookhaven National Laboratory SBMS Interim Procedure Interim Procedure Number 2004-18001-005 Procedure Number: 2004-18001-002 Revision: 14 on 1-26-07 Title: *Job Risk Assessments (JRA).*
- NSF-ISR Management System Assessment Report June 19-23, 2006 ISO 14001:2004; OHSAS 18001:1999. Phase I and Phase 2.
- NSF-ISR Management System Assessment Report Registration Audit of OHSAS 18001:1999. Phase 3 December 4-7, 2006.
- 2006 Internal Audit of the Occupational Health and Safety Management System for OHSAS 18001 Phase 1 & 2 Organizations (BES; HENP; NSLS; PO; IO; F&O) April 28, 2006.

EENS Directorate

- Facility Support Hood Tickler System Airflow Information for EENS Directorate
- EENS Home page
- EENS Directorate OHSAS web page as modified December 1, 2006
- EENS Management Review Meeting Presentation and Minutes– September 28, 2006
- EENS Job Risk Assessments JRA 1,4, 5, 10, 14, 25,
- Procedure: EENS Directorate. Work Plan and On- The- Job Training Check-List – Building 490 A Autoclave Use.
- Work Permit #490A-060506-09 Standing Work Permit
- Correspondence: From W. Horak to P. Carr. R2A2 in process of revision. Dated 2/7/07
- EENS OHSAS 18001 EENS Management System Description. Approved 10/3/06
- EENS ESH Management Plan ESH FY 2007 Objectives and Targets. Objective Improve EENS ES&H Program 2/2/07
- EENS ESH Management Plan ESH FY 2007 Objectives and Targets. Objective Maintenance EENS ES&H Program 2/2/07
- Introduction to the EENS Directorate PC - EENS ESH Orientation Rev 2 -2/1/07
- Status of EENS ESH FY)& Objectives and Targets 2/5/07
- EENS Safety Newsletter Special Pre-Audit Edition February, 2007
- EENS Status of ESH FY07 Objectives and Targets
- ESSR 16104Er0 January 22, 2004. Stephen Sprigston, Judy Lloyd
- EENS Listing of Vented to Outside exhaust systems not connected to Lab Hoods. 2/07
- EENS Examples of Flow-down and follow-up of training from P. Carr for new and existing employees.
- ESR 100000Ne0 October 20, 2000
- ESR 11601Er1 October 2004 Reductive precipitation and stabilization of uranium complexes with organic ligands by anaerobic bacteria.
- Internal Audit of EENS Directorate. Assessment dates August 17- September 12, 2006
- Correspondence from Pat Sullivan/C. Schaefer; N. Contos regarding HEPA filtered Ventilation Systems. 2007; 2005
- EENS Correspondence on HEPA Filtered Ventilation Systems from 2005 and present

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Collider Accelerator Department

- Internal Audit Report of the Collider Accelerator Department (C-AD) and Superconducting Magnet Division (SMD) Environmental Management system (EMS) and Occupational Health and Safety Management System (OHSAS), conducted May 31- June 1, 2006. Issued June 6, 2006
- FY06 Self Assessment Safety and Health Program Review Artie Piper OSH/EMS Management Representative ESH Coordinator January 30, 2007.
- Management Review of Occupational Safety and Health, Environmental Security and Self Assessment Management Systems for Collider-Accelerator Department, October 11, 2006.
- Minutes – SMD Self-Assessment February 8, 2006
- Slides – SMD Self Assessment February 8, 2006
- ISO 14001 EMS Management Review for the Superconducting Magnet Division January 30, 2007
- Collider Accelerator Department Management Review Agenda FY 2006.
- Collider Accelerator Department Management Record of Decision from Senior Management Evaluation Held on 10/11/2006.
- FY06 Self Assessment Safety and Health Program Review Artie Piper January 30, 2007
- ISO 14001 EMS Management Review for the SMD M. Van Essendelft January 30, 2007
- OSH task List
- CA JRA 16-07 Working with Hazardous Materials. Jan 5, 2007 Rev # 2.Change Mercury Bulb Crusher Bag filter, and crush fluorescent bulbs.
- C-A Operations Procedure Manual. 14.30 C-AD/SMD OSH Management Plan for Accelerators, Experimental Areas, Shops and/or Offices.
- SMD Self Assessment C-AD and SMD EMS and OSH Targets and Objectives from Joint C-AD/SMD Management Review on October 11, 2006 E. Lessard January 30, 2007.

Life Science Directorate

- Internal Audit of Life Science Directorate July 24-September 8, 2006
- Life Sciences FY 07 Self Assessment Plan Number LS-SAP-07. 12/26/06
- Life Sciences Directorate Life Sciences OHSAS 18001 Management System Description. October 6, 2006 Rev. 1
- Life Sciences EMS/OHSAS & Operations Management Review September 28, 2006
- Local Emergency Plan Information – Biology Department Bld 463 RLC Rev 2 1/29/07
- Life Sciences OHSAS JRA Autoclave Use. DJ-JRA04-Autoclave 11/29/04
- Life Sciences Directorate – Operational Support Occupational Health and Safety Assessment Series. The 18001 Standard Management System web page.
- Life Sciences OHSAS JRA Manual Lifting (of loads of about 50 pounds or less). Rev 0; 10/11/06
- Life Sciences OHSAS JRA Work with Laboratory chemicals DJ-JRA17 9/30/06
- Life Sciences Priority of Facility Risk Assessments. Updated 10/10/2006
- Life Sciences Priority of Job Risk Assessments.
- Life Sciences OHSAS FRA DJ-FRA08-bld 421.
- Life Sciences OHSAS JRA Machine shop use DJ-JRA-12-Machine Shop. 1/31/06
- Introduction to the Life Sciences Directorate
- Life Sciences Operations Management Review, September 25, 2006
- Centers for Disease Control and Prevention Select Agent Program. Facility Inspection Report for Brookhaven National Laboratory dated December 06, 2006.

Basic Energy Sciences Directorate

- OSH Key Contact List October 27, 2005 rev. 2
- Chemistry Department Priority Of Job Risk Assessments 2/2/2007
- Condensed Matter Physics and Material Handling Web page
- Reviewed JRAs and FRAs.
- BES Directorate FY 2007 Self-Assessment Plan January 05, 2007

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Instrumentation Division
- FY2007 Targets & Objectives
- Records on Targets Tracking
- IO OSH Web Page
- Activity Safety Reviews
- FY2006 EMS/OSH Management Review Presentation
- Minutes of the FY2006 EMS/OSH Management Review
- FY2007 OSH Plan
- ASR Risk Assessment Table 3
- FY2006 OSH Internal Audit

Facility & Operations Directorate
- Equipment Movement Request form
- ESH Concern form
- ESH Flash Report
- Procedure and Property Management Manual
- Operator Aid- paper shedder posting
- O&M-WTF-011
- O&M-WTF-011A
- O&M-WWTF-008
- O&M WWTF-06
- F&O Directorate ES&H Targets and Objectives for FY 2007, 11/28/2006
- Internal Audit of Emergency Services Division, Safeguards & Security, and Procurement & Property Management Division, 11/27/2007

Physic Department
- Minutes of Physic Department Management review, 10/9/2006
- OHSAS 18001 Management Plan 01/01/2007.
- Experimental Safety Reviews from Physics web site.
- PO-JRA-002 Plastic Scintillator Fabrication
- PO-JRA-010 Hazardous Chemical Work
- PO-FRA-001 Office Spaces
- PO-FRA-004 General Fire Issues
- ESR Current form V4.1
- PO2007-075 ESR VISA-II, 1/24/07
- PO2007-131, ESR Quad-cavity beam motor 2/07/07
- PO2006-129, ESR Phoenix Forward RPC Assembly and Test, 1/08/2007

Environmental Restoration Projects
- OHS Management Plan: OHS FY 2006 Objectives and Targets 09/21/2006.
- ERP Operations Procedure Manual
- ERP Job Risk Assessments from OSH Web site.
- Internal Audit of Environmental Restoration Projects, 11,27, 2007
- EMS/OSH Management Review presentation
- ERP-JRA-001 Duct Inspection
- ERP-JRA-004 WLA Water Transfer
- ERP-JRA-008 HFBR Misc Activities

National Synchrotron Light Sources
- NSLS FY 06 ESH Improvement Plan

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- CMS Static Inventory Room 1-128
- NSLS ESSH Policy Posting locations inventory list
- Safety Approval form
- NSLS OSH Web site,
- JRA web listing
- LS-JRA-0020 Chemical Work (Hazardous Chemicals),
- LS-JRA-0030 Accelerator Operations;
- LS-JRA-0028 Line Commissioning and Fault Studies.
- LS-FRA-0009 General ODH Issues.
- Minutes of NSLS EMS/OSH Management Review
- NSLS EMS/OSH Management Review presentation

ESH&Q Directorate & Support Organizations Reporting to the Director's Office (SORD)

- Broadcast-i@bnl.gov notice of "New Subject Area Posted on SBMS" Electrical Safety Subject Area 1/12/2007
- Occupational Safety & Health Management System Program Description (OSH Manual) DH-SOP-007, 09/18/06.
- SHSD OSH Web Page
- SHSD 2007 OSH Self Assessment Plan
- SHSD Standard Operating Procedures
- ESH&Q Directorate 2006 OSH Management Review presentation slides
- ESH&Q Directorate 2006 OSH Management Review Minutes of Meeting
- Internal Audit of the ESH&Q Directorate, Final Report 11/27/06.
- Internal Audit of the SORD, Final Report 11/27/06.
- SHSD JRA-01 HEAP filter Testing Rev0, 02/28/06
- RCD JRA-02 Lab Hood Testing 10/11/06
- EWMSD FRA Building 51 06/07/05
- EWMSD FRA T-528 06/07/05
- SORD OSH Web site
- CEGPA ESH FY 2006 Targets and Objectives , Rev 0
- CEGPA OSH FY 2007 Targets and Objectives , Rev 2
- HR/OMC FY2006 Objective
- ISD FY2006 OSH Objectives
- ITD FY2006 OSH Objectives
- OPSP FY2006 Objectives
- Finance JRA-04 Cashier Function
- Finance JRA-03 Driving
- IA&O FRA-01; JRA-04; JRA-03
- IA&O OSH Management Plan, Rev1

ATTACHMENT E

ISO 14001 Assessment of Brookhaven National Laboratory (BNL) Environmental Management System (EMS) FINAL AUDIT PLAN

[FINAL 01/31/07, Rev.0]

1.0 CONFIDENTIALITY: Draft copies of the audit report are not approved for public release. The final report will be issued as an Executive Summary accompanied by a detailed checklist.

2.0 DISTRIBUTION OF REPORT:

- **Draft Report** - *To be provided by BNL.* Recommend distribution to potential corrective action management system owners, and appropriate management.
- **Final Report:** *To be provided by BNL.* Recommend distribution to corrective action management system owners and top management. BNL to distribute informational copies of final report to other interested parties.

3.0 ORGANIZATION AUDITED: Brookhaven National Laboratory (BNL), Upton, NY

3.1 ORGANIZATION POINT OF CONTACT: John Selva, Environmental & Waste Management Services Division, Field Services Supervisor/EMS Program Manager, Brookhaven National Lab, PO Box 5000, Upton, NY 11973. Phone: (631) 344-8611, FAX (631) 344-3223. E-mail: selva@bnl.gov

3.2 SCOPE OF AUDIT:

- The scope of the EMS audit is the BNL campus in Upton NY.
- The elements that will be the focus of this audit include:
    - Environmental Policy
    - Environmental Aspects
    - Legal & Other Requirements
    - Objectives, Targets & Programs
    - Resources, Roles, Responsibilities and Authorities
    - Competence, Training and Awareness
    - Management Review
- An OSH auditor will accompany EMS auditors for the program portion of the audit, but will conduct field reviews and document results separately.
- The institutional program and all Directorates are included in the scope of this assessment, but not all Divisions within each Directorate will be assessed individually. The line organizations that will be the focus of this assessment (in addition to follow-up evaluation of the institutional program) are:
    - Directors Office – Interview with Lab Director Sam Aronson, Deputy Director for Science and Technology Peter Bond and Deputy Director for Operation Mike Bebon.
    - Institutional Program – R2A2 (Robert Kelly), Training & Qualification (Beth Schwaner) Objectives and Targets (Doug Ports), Legal and Other Requirements (Requirements Management Subject Area R. Lebel)). All other elements (G. Goode, R.Lee, J. Selva)
    - Nuclear & Particle Physics – Physics, Instrumentation, Collider Accelerator, Superconducting Magnet (including integration with CAD program)

- Basic Energy Sciences – Nanomaterials (aspects, legal only), Chemistry, Condensed Matter Physics & Materials Science
- Life Sciences –Medical and Biology
- Light Sources – NSLS
- EENS – Environmental Sciences, Energy Sciences & Technology, NNSD
- Facilities & Operations – Plant Engineering, Central Fabrication Services, procurement (EPP, Communication, Documentation, Records and Evaluation of Compliance as time allows)
- ESH&Q - Environmental & Waste Management, Quality Management (SBMS)
- Environmental Restoration Projects

4.0 AUDIT OBJECTIVES:

- Evaluate system effectiveness at achieving the commitments in the environmental policy.
- Evaluate implementation of the EMS (relative to ISO 14001 Program Description) in select line organizations.
- Evaluate areas identified during previous EMS as needing further follow up (see Section 4.8).
- Evaluate whether the EMS is being properly maintained.
- Evaluate continual improvement of the EMS (e.g., follow-up and implementation of corrective actions identified in previous audits, plans for further improvement of the EMS).
- Assess EMS strengths and opportunities for improvement. Suggest focus areas for future audits.

4.1 AUDIT CRITERIA:

- ISO 14001: 2004 Environmental management systems – Specifications with guidance for use
- Program Description: ISO 14001 Plus Environmental Management System Manual, Effective Date: Jul 31, 2001 (Reviewed: Feb 15, 2005)

4.2 APPLICABLE AUDITING GUIDELINES:

- ISO 19011:2002, Guidelines for quality and/or environmental management systems auditing
- Environmental Assessments Subject Area, Jun 15, 2001

4.3 AUDIT SCHEDULE

Period Covered: Current status as of date of desk audit.

Dates Conducted: See schedule below.

Audit Tasks and Dates:

Day 1	October 18	Prepare draft audit plan and submit to BNL for comment
Day 14	November 1	Receive BNL comments on draft audit plan and checklist
Day 21	November 8	Submit final draft audit plan to BNL
Day 28	December 1	BNL approval of final draft audit plan
Day 28	December 7	Provide BNL with list of any documents needed for desk audit
Day 42	December 20	BNL compiles documents to be reviewed, FedEx to team/provide e-mail link
Day 42	December 20	Finalize onsite interview schedule. Discuss strategy and data needed
Day 46	January 5	BNL notifies organizations to be assessed by e-mail and schedules interviews
Day 60	January 12	Desk audit begins (conducted offsite)

Day 65	January 22	Desk audit ends, concerns and questions in writing to BNL
Day 70	January 23	Discuss response to concerns and questions, determine if any changes to onsite audit (e.g., interviews) are needed
Day 84	February 4	Travel to BNL
Day 85	February 5	Pre-Assessment opening morning meeting (presentation by audit team and BNL POC), onsite audit begins
Day 90	February 9	Onsite audit ends. Prepare for Outbrief in morning, conduct Outbrief early afternoon to review findings. Provide PowerPoint presentation with preliminary results to BNL
Day 100	February 16	Discussions with BNL as needed.
Day 114	February 23	Team provides write-ups for checklist to audit lead
Day 128	February 28	Draft summary report submitted to BNL
Day 142	March 9	Receive comments from BNL on report
Day 150	March 20	Submit final report to BNL
Day ?		BNL issues and distributes report

4.4 AUDITORS:

Elizabeth A. Zimmerman, Lead (EMS)
EMS-A Certified Auditor, RABQSA International (EMS-#E052181)
Certified Environmental Professional, Academy of Board Certified Environmental Professionals (#379)
Pacific Northwest National Laboratory, ESHQ, Richland, WA
Mailing Address: 15 Shaw Road, Woodstock Valley, CT 06282-2623
Phone: (860) 974-3020 Fax: (860) 974-3020 (call first)
E-mail: Elizabeth.zimmerman@pnl.gov

Other members of audit team:

David Skipper
Completed ISO 14001:2004 EMS Lead Auditor Training
ORNL, Environmental Protection & Waste Services, Bethel Valley Road, PO Box 2008 MS 6395, Oak Ridge, TN 37831, Phone: (865) 576-5748, Fax: 865) 576-6196
Email: skipperdd@ornl.gov

NOTE: Portions of this audit are combined with the OHSAS 18001 audit. OHSAS Auditors are Bob Selvey and Nicole Bernholc.

4.5 AUDIT APPROACH: Review relevant documents developed/modified/finalized since previous audit, and other documents requested. Evaluate areas identified for further evaluation (Section 4.8). Evaluate implementation progress since previous audit. Conduct interviews as necessary (e.g., with top management, ES&H Manager, Environmental program manager, EMS Management Representative, audit Point of Contact, EMS Project Manager, EMS Representatives, management systems stewards, line managers and staff, contractors and others working for or on behalf of organizations with environmental aspects), as per Section 4.7.

An executive summary/cover report and an EMS checklist will be prepared. Nonconformities will be documented on the EMS checklist. Recommendations for improvement that are not related to nonconformities may be documented in a separate memo.

Conduct opening and closing meetings, with attendance to be determined by BNL. (Recommended attendees: top management, DOE, and staff who are slated for interviews during the audit). Daily debriefings will be held with the ISO 14001 Program Manager and the Independent Oversight Manager, and a DOE representative. During the onsite portion of the assessment, draft summaries of nonconformities will be provided to the point of contact for review and comment. The presentation at the closing meeting will summarize findings.

4.6 AUDITEE RESPONSIBILITIES (in addition to tasks/responsibilities listed above). Documents to be provided by BNL: See list provided. Access to a meeting room, office, telephone and computer with internet access to be used during onsite audit to be provided by BNL. Scheduling and arrangement of meeting rooms (with AV equipment to project for auditor laptop) for opening meeting and outbrief. BNL point of contact to make administrative support available as needed. BNL Point of contact will develop and maintain interview schedule with input from the lead auditor, providing updates as needed, and provide notification to interviewees. John Selva will provide onsite technical support as needed.

4.7 INTERVIEW SCHEDULE

ISO 14001:2004 Clause	Auditor	BNL Primary Contacts
General requirements	Not included in scope of this audit	EMS Coordinator/author of EMS Manual
Environmental Policy OSH & EMS	Skipper/Zimmerman	Lab Director, Deputy Directors, VPs/Level 1s, interviews of employees and persons working for or on behalf of organization (including contractors, students). Goode, Selva.
Environmental aspects EMS ONLY	Zimmerman/Skipper	Person who leads aspects analysis/review (e.g., EMS Coordinator), line personnel to see if they understand hazards associated with their work. Goode, Selva.
Legal & other requirements		Environmental subject matter experts, persons who conduct reviews of proposed/final regulations to determine applicability, people who document determinations (sometimes these are quality folks) Lebel, Lee, Goode, Selva.
Objectives, targets & programs EMS ONLY	Zimmerman/Skipper	Managers, staff responsible for achieving objectives and targets, EMS coordinator, sometimes quality (if they track performance measures) Ports. Goode, Selva.
Resources, roles, responsibility & authority OSH & EMS	Skipper/Zimmerman	Human resources, managers of staff involved in work with significant aspects. Bob Kelly (R2A2s)
Competence, training & awareness OSH & EMS	Skipper/Zimmerman	training coordinators, training Program Manager, person who maintains databases/records of training. Schwaner (training &

ISO 14001:2004 Clause	Auditor	BNL Primary Contacts
		quals)
Communication	Not included in scope of this audit	Communications/public relations staff, EMS staff involved in internal communications
(EMS) documentation	Not included in scope of this audit	Primarily author of EMS Manual
Control of documents	Not included in scope of this audit	Program Manager, people who generate documents (procedures, etc.)
Operational control	Not included in scope of this audit	Environmental subject matter experts, line managers, workers, procurement/contracts, facilities and operations/construction and maintenance services, work planning, waste management personnel, waste water treatment operators
Emergency preparedness & response	Not included in scope of this audit	Program Manager, workers
Monitoring & measurement	Not included in scope of this audit	Quality folks/whoever tracks performance on objectives and targets; calibration staff/contractors, personnel involved with environmental monitoring systems
Evaluation of compliance	Not included in scope of this audit	Person who "owns" procedure(s) on compliance evaluations, environmental subject matter experts/field support, quality organization (self-assessment program)
Nonconformity, corrective & preventive Action	Not included in scope of this audit	Program Manager, owners of corrective actions
Records	Not included in scope of this audit	Program Manager, people required to maintain records (training, calibration, people who maintain audit records, environmental subject matter experts, etc.)
Internal (EMS) audits	Not included in scope of this audit	EMS coordinator, Program Manager (often quality/independent oversight/audits), auditors
Management review OSH & EMS	Zimmerman/Skipper	EMS coordinator, top management. Goode, Selva.

4.8 AREAS IDENTIFIED AS NEEDING FURTHER EVALUATION IN PREVIOUS EMS AUDIT

The following items related to the elements selected for review during this assessment were identified during previous audits or during discussions with the BNL.

- None identified.

- **4.9 DOCUMENTS REQUESTED FOR DESK AUDIT**

DOCUMENTS

- Objectives and targets and associated documentation on Environmental Management Programs for most recent and current FY (lab level and org level for orgs we will be reviewing)
- EMS program description (both lab level and for the orgs we will be reviewing)
- Current list of aspects that could have significant impacts (lab level and line)

RECORDS

- Review and revision tracking of changes in significant impacts and relevant environmental objectives (lab and org level).
- Information to track performance and conformity with the organization's environmental objectives and targets.
- Training records (access to system) and access to job hazard assessments
- Environmental management system audit reports (last internal, last NSF)
- Management review (documentation of results of review and copies of what was presented) lab level and orgs we are reviewing
- Environmental management review schedule (both lab level and line)

PROCEDURES

- Identification of significant aspects/impacts.
- Identification & access to legal & other requirements.
- Training.

OTHER

- List of issues identified as doc control problems
- R2A2s (generic and then sampling of individuals we talk to), EMS roles for management rep or other special EMS roles (like line reps)
- Individual goals (performance plans) for some key managers and those with key EMS roles
- GET training (CBT?)
- EMS training (CBT?)
- Training for new managers (environmental piece)