What is Management expected to know about Integrated Safety Management?

April 23, 2007

Office of Science
U.S. DEPARTMENT OF ENERGY

Brookhaven Science Associates
U.S. Department of Energy

BROOKHAVEN
NATIONAL LABORATORY

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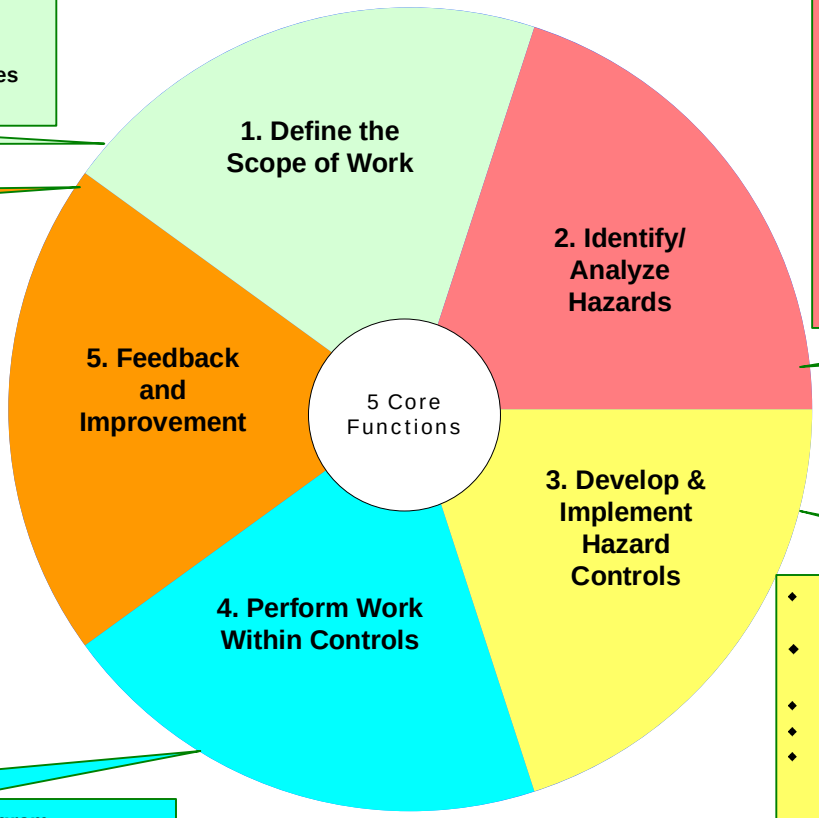
Integrated Safety Management - 5 Core Functions

Note: For a detailed description of core functions see the ISM Dictionary starting on Page 15

- DOE Contract with BSA
- Program Letters (Science & Others)
- BNL Annual Laboratory Plan (ALP)
- Business Plans
- Year-end Integrated Assessment Report
- Continuous Improvement Proposals
- Performance Evaluation Measurement Plan (PEMP)
- Individual Performance Goals & Roles, Responsibilities, Authorities & Accountabilities (R2A2s)

- Requirements Management
- Authorization Basis Documents
- Proposal Information Questionnaires (PIQs)
- Emergency Preparedness
- Scientific initiative planning
- Environmental Management System
- Worker Safety & Health (10 CFR 851, industrial hygiene, radiological control, industrial safety)
- Contractor Health & Safety Plans
- Operations Authorization/Operational Readiness Evaluation (ORE)
- Annual Laboratory Plan (ALP)
- Worker Observations, TIER I Inspections
- Hazard recognition skills of workers - Job/ Facility Risk Assessments (JRAs/FRAs)



- DOE-BHSO Evaluation & Feedback Process
- Quarterly Performance Reviews
- Integrated Assessment Process
- Self Assessments
- External Assessments (BSA, BHSO, Independent Oversight)
- Contract PEMP Results
- Contractor Assurance Process
- Incident/Event Investigations
- Price Anderson Amendments Act (PAAA), Work Safety & Health Rule & lessons learned
- EMS/OHSAS Management Reviews
- Assessment Tracking System (ATS)
- Quality Program
- Annual Laboratory Plan (ALP) process
- Performance Appraisal Process

- Requirements management, program letters, Institutional limits
- Safe workplace (eliminating or controlling hazards)
- Condition Assessment Surveys (CAS)
- Fire Hazard Analyses, TIER I inspection
- Worker Safety & Health (10 CFR 851, industrial hygiene, radiological control, industrial safety) programs
- Procurement process
- Operational Readiness Review process
- Safe Worker (Building a “safety shield” around each worker)
- OHSAS 18001 (Job/Facility Risk Assessment process)
- Training & Qualifications - Job Training Assessments (JTAs), contractor vendor orientation training
- Chemical hazard information (Chemical Management System)
- Contractor Health & Safety Plan

- Work Observations/Stop Program
- Work Permits/Experimental Safety Reviews
- Construction Safety Inspections
- Stop Work & Radiological Stop Work
- Standards Based Management System
- Work Permit Programs
- Environmental Monitoring
- Industrial hygiene, RadCon, & industrial safety programs

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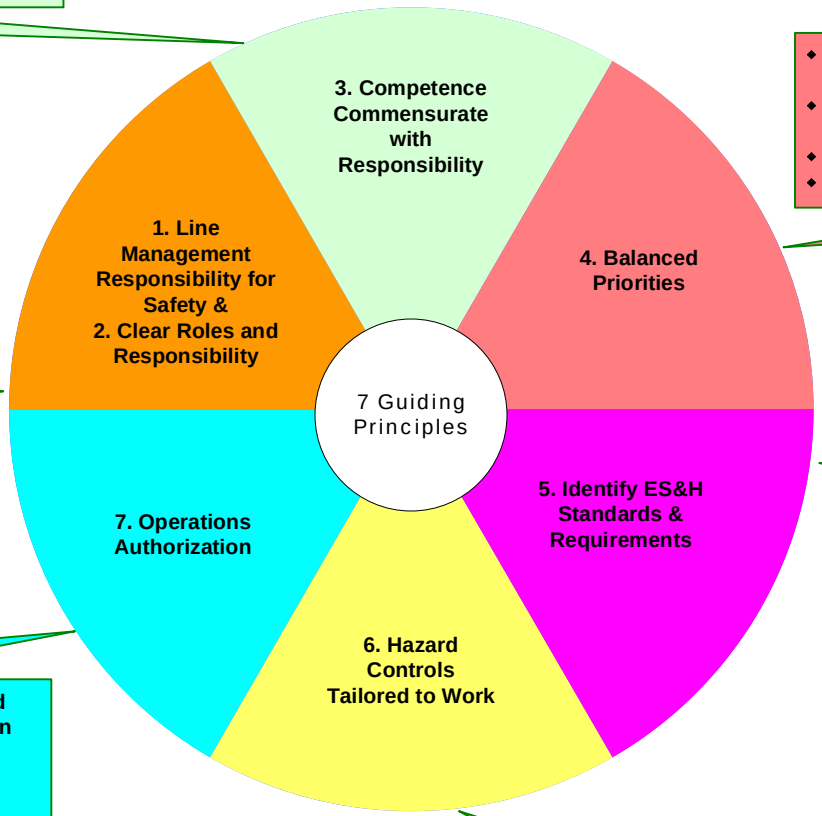
Integrated Safety Management - 7 Guiding Principles

Note: for a detailed description of guiding principles see the ISM dictionary starting on Page 21

- **Human Resources processes for staff requisitions**
- **360 Degree Feedback Leadership Development**
- **Training and Qualification - Job Training Assessments (JTAs)**
- **Brookhaven Training Management System (BTMS)**

- **Developing & Maintaining Roles, Responsibility, Authority & Accountability (R2A2)**
- **Responsibilities defined in SBMS Documents [Management Systems, Program Descriptions, Subject Areas, Facility Use Agreements (FUAs)]**
- **Acquisition Management - Flowdown ES&H requirements to subcontractors**
- **Safety Observations Program**



- **Project Planning Programming and Budgeting Process (3PBP)**
- **Annual Laboratory Plan (ALP), Strategic Focus Areas (SFAs)**
- **Business Plans**
- **Performance Evaluation Measurement Plan**

- **ES&H Standards & Requirements in the BSA Contract**
- **Requirements Management function within the Quality Management Office**
- **Records of Decision (RODs) - defines how BNL complies with a contract requirement**
- **Implemented through Management Systems and Subject Areas**

- **The Operating Contract between BSA and DOE is the Laboratory-Level Authorization Agreement**
- **Operational Readiness Evaluation (ORE)/ Start-up**
- **Facilities Operating Envelope - Facility Use Agreements (FUAs)**
- **Facility Safety - Authorization Basis Documentation, Documented Safety Analyses**

- **Work Planning and Control Management System provides the laboratory-level procedures and expectations**
- **Worker involvement (Job/Facility Risk Assessments (JRA/FRA)**
- **Pre-job walk-downs**
- **Formal internal and standard operating procedures**

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I. Overview of DOE Office of Environment Safety and Health Evaluation

This document outlines the information that management is expected to know for the upcoming Integrated Safety Management Audit.

The first two pages are graphics that show the ISM Guiding Principles and ISM Core Principles and how these principles are implemented at the Laboratory. The remainder of the document summarizes typical lines of inquiry (LOI) (questions that guide the assessor in planning and conducting an assessment (e.g. a checklist)), the expectations of the Department of Energy's (DOE's) Office of Environment, Safety and Health (ES&H) Evaluations, and how the Laboratory implements those expectations. To avoid confusing terms, whenever this document refers generically to the term " environment, safety, and health" the term should be interpreted as "integrated safety management."

In addition to understanding how the Lab implements expectations, it is likewise important to understand how individual departments and divisions implement the expectations. A separate document will be prepared for supervisory level staff. Information that other employees need to know will be provided through regular communication activities: the Bulletin, web, handouts, etc.

This document is based on a typical plan for a DOE ISM (ES&H) Inspection, and includes what the evaluation team will use to assess Brookhaven National Laboratory's (BNL's) ISM programs

A. Schedule

The overall inspection process has several stages; which include: scoping, planning, onsite inspection activities, validation, and closeout. Many of the planning activities including team orientation, facility tours, and preliminary document reviews are conducted prior to the onsite inspection visit.

The onsite inspection (the main phase) will be conducted over a two week period. During this period, inspection activities will be performed throughout the BNL Complex. Those activities include: interviews, walk-downs, work observations, and document reviews. Following completion of the onsite inspection visit, a draft report will be prepared and made available to line management for review and feedback. Finally inspection results will be briefed to key BNL managers. BNL will have 60 days from the time the final report is issued to develop and submit to DOE-Head Quarters (HQ) a corrective action plan that addresses all findings and observations. The overall schedule that the Office of ES&H Evaluations prepared for BNL is provided below.

Scoping Visit	May 8th and 9th, 2007
Planning Visit	August 6th -- 10th, 2007
Onsite Inspection Visit	August 20th -- 31st, 2007
Report Validation/Closeout	September 19th – 21st, 2007
Draft Report BNL Site Comments due	October 1st, 2007
Final Report Issued	October 15th, 2007
BNL Corrective Action Plan Submittal	December 15th, 2007

B. Scope of the Inspection

The Office of ES&H Evaluation's role is to provide an independent evaluation of ES&H program effectiveness, which gives line management essential feedback on program status and direction. The approach the team will take is a "top-down" approach to inspection planning that focuses on overall program effectiveness across the breadth of BNL's program. However, as part of this approach, the team will conduct carefully targeted, in-depth reviews of particular aspects of program implementation to effectively evaluate performance (i.e. work observations, limited-scope performance tests, facility walkthroughs and analysis of program documentation). This activity will target all of the work performed at BNL (i.e., operations and science).

After thoroughly reviewing previous DOE ES&H evaluation reports (Pacific Northwest, Oak Ridge, and Argonne National Laboratories), it is anticipated that the specific ES&H focus areas to be evaluated at BNL will include:

- Status and Implementation of DOE Order 226.1, DOE Oversight (e.g., feedback and improvement, event reporting, operating experience, issues management);
- Workplace Monitoring of Non-radiological Hazards;
- Work Planning and Control Processes; and
- Environmental Management System Impacts.

II. DOE Expectations/Attributes and BNL Implementation/Processes

1. Line Management Responsibility for Safety – Line management is directly responsible for the protection of the public, the workers, and the environment.

a. Typical Lines of Inquiry (LOI) may include the following:

- **i.** Has improving ES&H been included as a strategic goal, and has ES&H been given proper senior management attention and assigned an appropriate level of priority in budgeting and in the performance evaluation process?
- **ii.** Is line management identifying needed organizational and behavioral changes and providing leadership to achieve them?
- **iii.** Does the employee concerns program resolve employee safety concerns effectively? Do employees receive timely and responsive feedback on submitted concerns?

DOE Expectations/Attributes	BNL Implementation
▪ Line managers understand and accept their safety responsibilities inherent in mission accomplishment. Line managers do not depend on supporting organizations to build safety into line management work activities. ▪ Line managers demonstrate their commitment to safety. Top-level line managers are the leading advocates of safety and demonstrate their commitment in both word and action. Line managers periodically take steps to reinforce safety, including personal visits and walkthroughs to verify their expectations are being met. ▪ Line managers spend time on the floor. Line managers practice visible leadership in the field by placing "eyes on the problem," coaching, mentoring, and reinforcing standards and positive behaviors. ▪ Line managers are skilled in responding to employee questions in an open, honest manner. They encourage and appreciate the reporting of safety issues and errors	▪ The Human Resources Management System provides the processes for developing and maintaining formal roles, responsibility, authority, and accountability (R2A2) documents for all staff. The R2A2s demonstrate that line managers have responsibility and accountability for ES&H and indicate how the responsibilities flow from the Laboratory Director to the workers. ▪ Responsibilities specific to the management systems are also defined in Laboratory-wide Standards Based Management Systems (SBMS) documents (Management Systems, Program Descriptions, Subject Areas, and Facility Use Agreements). ▪ Line Management performs Safety Observations to identify unsafe conditions, and to observe and provide feedback to workers on safe and at risk behaviors.

2. Clear Roles and Responsibilities – Clear and unambiguous lines of authority and responsibility for ensuring safety shall be established and maintained at all organizational levels within the Department and its contractors.

a. Typical Lines of Inquiry (LOI) may include the following:

- **i.** Are personnel at all organizational levels, including DOE, held accountable for assigned ES&H roles and responsibilities?
- **ii.** Are the roles, responsibilities and authorities of managers, individuals working within buildings or facilities, and work control personnel for authorizing and performing work been clearly assigned in accordance with approved procedures?
- **iii.** Has the responsibility for determining facility-operating limits, based on hazard analysis processes, and been assigned?
- **iv.** Does line management use performance metrics and feedback processes effectively to hold organizations and individuals accountable for ES&H performance?

DOE Expectations/Attributes	BNL Implementation
▪ The line of authority and responsibility for safety is defined from the Director to the individual contributor. Each of these positions has clearly defined roles, responsibilities, and authorities, designated in writing and understood by the incumbent. ▪ Organizational functions, responsibilities, and authorities documents are maintained current and accurate. ▪ Line managers provide ongoing reviews of performance of assigned roles and responsibilities to reinforce expectations and ensure that key safety responsibilities and expectations are being met. ▪ Personnel at all levels of the organization are held accountable for shortfalls in meeting standards and expectations related to fulfilling safety responsibilities. Accountability is demonstrated both by recognition of excellent safety performers as well as identification of less-than-adequate performers. In holding people accountable, in the context of a just culture, managers consider individual intentions and the organizational factors that may have contributed.	▪ The Human Resources Management System provides the processes for developing and maintaining formal roles, responsibility, authority, and accountability (R2A2) documents for all staff. The R2A2s demonstrate that line managers have responsibility and accountability for ES&H and indicate how the responsibilities flow from the Laboratory Director to the workers.

3. Competence Commensurate with Responsibilities – Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.

a. Typical Lines of Inquiry (LOI) may include the following:

- **i.** Are core competencies recognized and maintained in relation to changing site mission, work site hazards, and non-routine occurrences?
- **ii.** Are strategic staffing needs integrated effectively into staffing decisions?
- **iii.** Are recruiting policies and implementation strategies effective in attracting and retaining personnel with needed managerial, technical, and operational expertise and experience?
- **iv.** Does line management provide resources, allow work time for training, and hold workers accountable for meeting training requirements? Do subcontracting organizations verify workers' qualifications and provide the contractor with qualified workers?

DOE Expectations/Attributes	BNL Implementation
▪ People and their professional capabilities, experiences, and values are regarded as the organization's most valuable assets. Organizational leaders place a high personal priority and time commitment on recruiting, selecting, and retaining an excellent technical staff. ▪ The organization values and practices continuous learning, and require employees to participate in recurrent and relevant training and encourages educational experiences to improve knowledge, skills, and abilities. Professional and technical growth is formally supported and tracked to build organizational capability. ▪ Managers set an example for safety through their personal commitment to continuous learning and by their direct involvement in high-quality training that consistently reinforces expected worker behaviors. ▪ Managers encourage informal opinion leaders in the organization to model safe behavior and influence peers to meet high standards. ▪ Mental models, practices, and procedures are updated and refreshed based on new information and new understanding.	▪ Supported by the Training and Qualifications and Human Resource Management Systems. ▪ The training and qualifications management system establishes the process and framework for identifying and managing initial and continuing training. All employees and guests are assigned Job Training Assessment(s) (JTAs). JTAs list the minimum required training (Lab-level and Job-level) and qualifications (medical clearance, certifications) needed for assigned tasks. ▪ Managers and Supervisors reinforce training information and expectations for work performance at the worksite. ▪ Training and qualification status for staff is maintained and accessible in the training database for verification. Staff and supervisors receive emails to alert them to expiring qualifications. ▪ Additional job and professional development opportunities are provided to staff through Brookhaven's employee development program offerings and tuition reimbursement program.

4. Balanced Priorities - Resources shall be effectively allocated to address safety, programmatic, and operational considerations. Protecting the public, the workers, and the environment shall be a priority whenever activities are planned and performed.

a. Typical Lines of Inquiry (LOI) may include the following:

i. Do budget processes ensure that an appropriate level of ES&H resources is incorporated in project plans as well as routine facility and programmatic work?

ii. Has line management assessed the adequacy of processes and process implementation activities for translating mission into work at the site level, and do these processes appropriately consider ES&H?

iii. Has ES&H been appropriately considered in the prioritization and integration of projects, facility maintenance, construction and operations?

iv. Has the listing of unfunded activities for the facilities selected been adequately evaluated and analyzed to ensure that the lack of funding does not have an adverse ES&H effect on workers, the public, or the environment?

DOE Expectations/Attributes	BNL Implementation
▪ Safety and productivity concerns both receive balanced consideration in funding allocations and schedule decisions. Resource allocations are adequate to address safety. If funding is not adequate to ensure safety, operations are discontinued. ▪ Systems of checks and balances are in place and effective at all levels of the organization to make sure that safety considerations are adequately weighed and prioritized. ▪ Safety and quality assurance positions have adequate organizational influence. ▪ Adequate resources are allocated for safety upgrades and repairs to aging infrastructure. Modern infrastructure and new facility construction are pursued to improve safety and performance over the long term. ▪ The organization is able to build and sustain a flexible, robust technical staff and staffing capacity. Pockets of resilience are established through redundant resources so that adequate resources exist to address emergent issues. The organization develops sufficient resources to rapidly cope and respond to unexpected changes.	▪ Integrated Planning – Annual Laboratory Plan (ALP) risk based approach. Strategic and Directors planning retreat ▪ Project Planning, Programming and Budgeting Process (3PBP) – The 3PBP process is used by the Policy Council to prioritize proposals for General Plant Projects (GPP).

5. **Identification of Safety Standards and Requirements -** Before work is performed, the associated hazards shall be evaluated and an agreed-upon set of safety standards and requirements shall be established which, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences.

   a. **Typical Lines of Inquiry (LOI) may include the following:**
      - **i.** Is the contract requirement listing complete, and are requirements appropriately flowed down through institutional, facility and working-level procedures to all organizations and into subcontracts?
      - **ii.** Does a selected sample of requirement documents for subcontractors, health and safety plans, activity/job hazard analyses, work documents, and procedures indicate adequate flowdown of DOE and external requirements?
      - **iii.** Does the requirement management basis adequately encompass the scope of work performed by the contractor and subcontractors?
      - **iv.** Do procurement procedures for the acquisition of goods and services assure compliance with applicable ES&H requirements?

DOE Expectations/Attributes	BNL Implementation
▪ A clearly defined set of safety requirements and standards is invoked in management contracts, or similar agreements. An accepted process is used for identification of the appropriate set of requirements and standards. This set of requirements is comprehensive and includes robust quality assurance, safety, and radiological and environmental protection requirements. ▪ Implementing plans, procedures and protocols are in place to translate requirements into action by the implementing organization. ▪ Compliance with applicable safety and technical requirements is expected and verified. ▪ Applicable requirements from laws, statutes, rules and regulations are identified and captured so that compliance can be planned, expected, demonstrated, and verified. ▪ Exemptions from applicable technical safety requirements are both rare and specific, provide an equivalent level of safety, have a compelling technical basis, and are approved at an appropriate organizational level.	▪ The DOE establishes the ES&H Standards and requirements in the BSA Contract. The Requirements Management function within the BNL Quality Management Office receives new incoming DOE, Federal, State and other regulations, and administers the process of system champions and management system steward(s) review of the new requirement(s) and its integration into appropriate SBMS documents, through the Record of Decisions (RODs).

6. Hazard Controls Tailored to Work Being Performed – Administrative and engineering controls to prevent and mitigate hazards shall be tailored to the work being performed and associated hazards.

a. Typical Lines of Inquiry (LOI) may include the following:

- **i.** Has line management continually analyzed the hazards, vulnerabilities, and risks associated with facilities as they cycle through the phases of design, construction, operation and maintenance, and D&D activities?
- **ii.** Do planners, workers, ES&H staff, and facility management personnel walk-down work sites to identify activity related hazards and co-located hazards, based on risk associated with the activity?
- **iii.** D institutional level ES&H procedures address the hazards analysis process at the working level, and are the procedures properly implemented?

DOE Expectations/Attributes	BNL Implementation
▪ Organizations implement hazard controls in a consistent and reliable manner. Safety is embedded in processes and procedures through a functioning formal integrated safety management system. Facility activities are governed by comprehensive, efficient, high-quality processes and procedures. ▪ Hazard controls are designed with an understanding of the potential for human error. Error-likely situations are identified, eliminated, or mitigated. Existence of known error-likely situations is communicated to workers prior to commencing work along with planned mechanisms to assure their safety. ▪ The selection of hazard controls considers the type of hazard, the magnitude of the hazard, the type of work being performed, and the life cycle of the facility. Controls are designed and implemented commensurate with the inherent level and type of hazard. ▪ Safety analyses identifying work hazards are comprehensive and based on sound engineering judgment and data. ▪ Defense in depth is designed into highly hazardous operations and activities, and includes independent, redundant, and diverse safety systems, which are not overly complex.	▪ Work Planning and Control Management System. Worker Planned, Pre-Planned and Permit Planned work. Experimental Safety Review Process. Internal and Standard Operating procedures. These processes and procedures for each of these activity areas rely on strong worker involvement, which is accomplished through the development and use of Job Risk and Facility Risk Assessments (JRAs/FRAs) (including pre-job walk downs and briefings) to insure that staff involved with the activities understands the hazards, specific controls, and performance expectations of their work.

7. Operations Authorization - The conditions and requirements to be satisfied for operations to be initiated and conducted shall be clearly established.

a. Typical Lines of Inquiry (LOI) may include the following:

- **i.** Are the methods for authorizing work and readiness to perform work formal and documented?
- **ii.** Are mission/production (production over safety**)** pressures evident during the observation of work? Do these pressures have the potential to lead to unsafe practices or a failure to follow required controls?
- **iii.** Does the work approval and authorization process define appropriate mechanisms to address significant changes in work scope or method of completion once initial approval is obtained?
- **iv.** Are the environmental impacts of operations and activities properly monitored and measured?

DOE Expectations/Attributes	BNL Implementation
▪ Formal facility authorization agreements are in place and maintained between owner and operator. ▪ Readiness at the facility level is verified before hazardous operations commence. Pre-operational reviews confirm that controls are in place for known hazards. ▪ Facility operations personnel maintain awareness of all facility activities to ensure compliance with the established safety envelope. ▪ Work authorization is defined at the activity level. The work authorization process verifies that adequate preparations have been completed so that work can be performed safely. These preparations include verifying that work methods and requirements are understood; verifying that work conditions will be as expected and not introduce unexpected hazards; and verifying that necessary controls are implemented. ▪ The extent of documentation and level of authority for work authorization is based on the complexity and hazards associated with the work.	▪ The operating contract is the highest level operations authorization document for BNL. The requirements management processes maintain the DOE Directive authorization basis for the laboratory. ▪ The facility safety management system details the operations authorizations for the entire spectrum of facilities operated at BNL. ▪ The facility operations management system provides the basis for establishing and maintaining the facility operations envelope through the facility use agreements (FUAs).

Supplemental Safety Culture Elements – Based on experience and learning over the past ten years since the inception of Integrated Safety Management, the DOE has identified the following four (4) supplemental safety culture elements to be used, along with the seven (7) guiding principles.

A. **INDIVIDUAL ATTITUDE AND RESPONSIBILITY FOR SAFETY** - Every individual accepts responsibility for safe mission performance. Individuals demonstrate a questioning attitude by challenging assumptions, investigating anomalies, and considering potential adverse consequences of planned actions. All employees are mindful of work conditions that may impact safety, and assist each other in preventing unsafe acts or behaviors.

DOE Expectations/Attributes	BNL Implementation
▪ Individuals are intolerant of conditions or behaviors that have the potential to reduce operating or design margins. Anomalies are thoroughly investigated, promptly mitigated, and periodically analyzed in the aggregate. The bias is set on proving work activities are safe before proceeding, rather than proving them unsafe before halting. Personnel do not proceed and do not allow others to proceed when safety is uncertain. ▪ Individuals understand and demonstrate responsibility for safety. Safety and its ownership are apparent in everyone's actions and deeds. Workers are actively involved in identification, planning, and improvement of work and work practices. Workers follow approved procedures. Workers at any level can stop unsafe work or work during unexpected conditions. ▪ Individuals promptly report errors and incidents. They feel safe from reprisal in reporting errors and incidents; they offer suggestions for improvements. ▪ Individuals are mindful of the potential impact of equipment and process failures; they are sensitive to the potential of faulty assumptions and errors, and demonstrate constructive skepticism. They appreciate that mindfulness requires effort.	▪ Each BNL worker accepts personal responsibility and accountability for safe operations. Individuals demonstrate a questioning attitude by challenging assumptions, finding the facts for themselves and considering potential adverse consequences of planned activities. A sustained ISMS program is not possible without employees at all levels being involved in the structure and operation of the safety and health program and in decisions that affect employee health and safety. ▪ BNL ISMS relies on strong worker involvement and individual attitude and responsibility for safety. SBMS provides the processes and support necessary to incorporate significant worker involvement to establish appropriate Laboratory-wide procedures and guidelines (Subject Areas) to control the hazards that are part of the BNL hazards baseline. ▪ Other areas where worker involvement and individual attitude and responsibility for safety are key aspects of the ISMS are in the job risk assessments (JRA) and facility risk assessments (FRA) processes, and in planning and controlling work. ▪ At BNL, all staff is given "Stop Work Authority." Anyone observing a hazard that could result in death, serious injury, environmental impairment, or significant damage, and the condition requires immediate action, has the authority to stop the work.

B. **OPERATIONAL EXCELLENCE** - Organizations achieve sustained, high levels of operational performance, encompassing all DOE and contractor activities to meet mission, safety, productivity, quality, environmental, and other objectives. High-reliability is achieved through a focus on operations, conservative decision-making, open communications, deference to expertise, and systematic approaches to eliminate or mitigate error-likely situations.

DOE Expectations/Attributes	BNL Implementation
▪ Line managers are in close contact with the front-line; they pay attention to real-time operational information. Maintaining operational awareness is a priority. Line managers identify critical performance elements and monitor them closely. ▪ Operational anomalies, even small ones, get prompt attention and evaluation – this allows early detection of problems so necessary action is taken before problems grow. ▪ Individuals are systematic and rigorous in making informed decisions that support safe, reliable operations. Workers are expected and authorized to take conservative actions when faced with unexpected or uncertain conditions. ▪ Line managers support and reinforce conservative decisions based on available information and risks. ▪ Candid dialogue and debate and a healthy skepticism are encouraged when safety issues are being evaluated. Differing professional opinions are welcomed and respected. Robust discussion and constructive conflict are recognized as a natural result of diversity of expertise and experience. ▪ Line managers regularly and promptly communicate important operational decisions, their basis, expected outcomes, potential problems, and planned contingencies. ▪ Operations personnel are held to high standards of both technical understanding and detailed task-oriented performance.	▪ Managers are in close contact with the front-line; leaders pay attention to real-time operational information. ▪ Operational anomalies receive prompt attention and evaluation. ▪ Candid dialogue, debate, and a healthy skepticism are encouraged; and differing professional opinions are welcomed and respected. ▪ Managers and supervisors regularly and promptly communicate important operational decisions, their basis, expected outcomes, and potential problems.

C. **OVERSIGHT FOR PERFORMANCE ASSURANCE** - Competent, robust, periodic and independent oversight is an essential source of feedback that verifies expectations are being met and identifies opportunities for improvement. Performance assurance activities verify whether standards and requirements are being met. Performance assurance through conscious, directed, independent reviews at all levels brings fresh insights and observations to be considered for safety and performance improvement.

DOE Expectations/Attributes	BNL Implementation
▪ Performance assurance consists of robust, frequent, and independent oversight, conducted at all levels of the organization. Performance assurance includes independent evaluation of performance indicators and trend analysis. ▪ Performance assurance programs are guided by plans that ensure a base level of relevant areas is reviewed. Assessments are performed against established requirements (such as those defined in Criteria and Review Approach Documents). ▪ Performance Assurance includes a diversity of independent "fresh looks" to ensure completeness and to avoid complacency. A mix of internal and external oversight reviews reflects an integrated and balanced approach. This balance is periodically reviewed and adjusted as needed. ▪ Line managers throughout the organization set an example for safety through their direct involvement in oversight activities and associated performance improvement. ▪ Senior line managers are periodically briefed on results of oversight group activities to gain insight into organizational performance and to direct needed corrective actions.	▪ Performance assurance programs are guided by self-assessment plans that ensure a base level of relevant areas are reviewed. ▪ Senior Management (i.e. policy council, management, science councils) are periodically briefed on results of oversight group activities to gain insight into organizational performance and to direct needed corrective actions. ▪ Periodic ISM assessments are conducted and used as a basis for ISM program adjustments and implementation improvements.

D. **ORGANIZATIONAL LEARNING FOR PERFORMANCE IMPROVEMENT** - The organization demonstrates excellence in performance monitoring, problem analysis, solution planning, and solution implementation. The organization encourages openness and trust, and cultivates a continuous learning environment.

DOE Expectations/Attributes	BNL Implementation
▪ The organization actively and systematically monitors performance through multiple means, including leader walk-arounds; issue reporting, performance indicators, trend analysis, benchmarking, industry experience reviews, self-assessments, and performance assessments. ▪ Feedback from various sources is integrated to create a full understanding. Processes are established to identify and resolve latent organizational weaknesses that can aggravate relatively minor events if not corrected. Linkages among problems and organizational issues are examined and communicated. ▪ Open communications and teamwork are the norm. People are comfortable raising and discussing questions or concerns. Good news and bad news are both valued and shared. ▪ A high level of trust is established in the organization. Reporting of individual errors is encouraged and valued. A variety of methods are available for personnel to raise safety issues, without fear of retribution. ▪ Organization members convene to swiftly uncover lessons and learn from mistakes. Frequent incident reviews are conducted promptly after an incident to ensure data quality to identify improvement opportunities.	▪ Performance is monitored through a variety of indicators, including, management walk-arounds, safety observations, quarterly performance trending, benchmarking and self-assessments. ▪ Operating experience is highly valued. The organization regularly examines and learns from operating experiences, both internal and in related industries. ▪ Expertise in causal analysis is applied effectively to events. ▪ Performance improvement processes encourage workers to offer innovative ideas to improve performance and to solve problems. ▪ Managers are actively involved in all phases of performance monitoring, problem analysis, corrective action planning and implementation to resolve safety issues.

III. Integrated Safety Management Dictionary

Integrated Safety Management - is the framework BNL utilizes to integrate Environment (such as environmental protection, pollution prevention), Safety, and Health management into the work of the Laboratory. BNL's ISM system describes how we integrate the DOE's five Core Functions and seven Guiding Principles into BNL's work processes.

The Laboratory uses a model that Integrated Safety Management (ISM) occurs at three levels – Institutional, Facility and Activity. This document provides a detailed view of the high level processes at the ***institutional level***, used by management and mandated by senior management to be used across the Lab to implement ISM. These processes (and others) are documented in the Lab's Standards Based Management System (SBMS).

The SBMS, by definition, contains only those requirements that apply to more than one organizational unit at the Lab and set high level implementing requirements. Laboratory organizations are free to establish local procedures as necessary to implement the SBMS requirements. Thus, there is some variation in the specific procedures used to implement "management system level" processes within the various BNL organizations.

Core Functions

Core Function 1 - Define the scope of work

- **DOE contract with BSA** - The highest level document defining the scope of work for the Laboratory is the DOE contract with BSA. This document contains "Critical Outcomes" for BNL that are updated annually, and reflect the customer's highest non-science priorities for the year.
- **Program Letters** – Under the BSA contract, BSA receives more detailed direction from its various program sponsors in the form of "Program Letters" that further define the priority and scope of the scientific research, construction, environmental restoration, security, counterintelligence and other direct-funded activities.
- **Annual Laboratory Plan (ALP)** – Each year the Laboratory develops a more detailed plan that describes the scientific, operational, and business actions the Laboratory will undertake in the Plan year, at a level below the Business Plan, and their associated priority. These lower level actions are typically established at the Department/Division or project level (Level 2) and are generated from three primary sources:
    - The first source of ALP actions is the initiatives in the **Business Plan**. Laboratory organizations review the initiatives and the initiative leaders reach out to the various Lab organizations to determine the support needed to ensure the initiative's success. Each of these required support actions is scoped, scheduled, and resource-loaded (staff time and incremental contract/material costs identified for each task).
    - The second source of actions is the Laboratory's **Integrated Assessment Program (IAP) Report**. This report analyzes and summarizes the following inputs, identifies deficiencies and recommends related ***improvement actions*** that are needed in the Plan year based on the year just passed. (Please see Core Function 4 – Feedback and Improvement for a more detailed description of this process).

- **Continuous Improvement Proposals** are the third source of actions for the Annual Lab Plan. Each year various Laboratory organizations suggest opportunities to improve scientific output, safety or environmental performance, operational efficiency, service quality, or other performance parameters that exceed the organization's allocated resources. These proposals are typically generated at the Department/Division level and flowed to the Policy Council for prioritization and approval, via the annual budget process.

Each of these ALP actions is scoped, scheduled, and resource-loaded (staff time and incremental contract/material costs identified for each task), and a risk reduction priority or business case is developed for each, as applicable. Business Plan Initiative leaders do this for the actions supporting the Business Plan initiatives. Management System Stewards do this for the actions needed to address the Integrated Assessment Report, and each Department or Division does it for their respective continuous improvement initiatives for which they are seeking institutional resources.

The Policy Council, meeting in a retreat setting, reviews these various proposed actions, establishes priorities, and makes a commitment of resources. The Integrated Planning Office performs the integrating function and publishes the **Annual Laboratory Plan**.

The Annual Laboratory Plan is a living document and all of the initiatives and actions in it are reviewed quarterly as part of the Policy Council Quarterly Performance Review process. Also, it may be modified at any time to incorporate necessary initiatives and actions that arise throughout the year.

- **Business Plan** – Based on guidance provided to the laboratory by DOE, and its own internal planning process results, the Lab develops/updates a "Business Plan" each year that establishes the high-level science initiatives the Lab will be pursuing in the next 5-10 years. These initiatives are described in terms of national priority, impact if not performed, and alternatives. This Plan is formally approved by the Policy Council and ultimately used by DOE to develop their business plan for BNL which is submitted to the Congress. An example of a business plan-level initiative is NSLS II.
- **Performance Evaluation Measurement Plan** – primarily serves as DOE's Quality Assurance/Surveillance Plan (QASP) for the evaluation of Brookhaven Science Associates (BSA) performance regarding the management and operations of the Brookhaven National Laboratory. The performance evaluation provides a standard by which to determine whether the Contractor (BSA) is managerially and operationally in control of the Laboratory and meeting the mission and requirement performance expectations/objectives stipulated within the contract.
- **Individual Performance Goals and Roles, Responsibilities, Authorities and Accountabilities (R2A2**)

Core Function 2 – Analyze the Hazards

The Laboratory performs hazard identification on an institutional level through several mechanisms:

- **Requirements Management** – The rules, regulations, DOE Orders, and other documents that are included in the BSA contract contain many requirements and processes that function as barriers to ES&H hazards. BNL managers and subject matter

experts develop Laboratory level processes within the Standards Based Management System (SBMS) to implement these requirements.

- **SARs, SADs, Facility Use Agreements, Other Safety Basis Documents –** The Laboratory uses these safety basis document development processes to explicitly identify the hazards associated with operating its conventional, radiological, nuclear and accelerator facilities and to establish limits on work that can be done in each facility.
- **Proposals –** The Proposal Information Questionnaires (PIQs) used by Laboratory Principal Investigators to submit proposals for programmatic funding contain processes to assess the ES&H and waste management hazards associated with the work, and are reviewed by senior management to ensure that the work can safely be performed in BNL's facilities.
- **Emergency Preparedness** – The Laboratory uses the Emergency Preparedness Hazard Survey and Assessment (EPHA) process to identify and analyze hazards that may arise from significant accident events that could result in chemical or radiological releases at the Laboratory's facilities
- **Scientific Initiative Planning** – The process used to perform detailed planning for new scientific initiatives each the initiative.
- **Environmental Management System (EMS - ISO 14001)** – The Laboratory uses the planning process associated with the EMS to identify potential environmental hazards associated with Laboratory operations.
- **RadCon Program** – The Laboratory has established a radiological control program to ensure radiological hazards associated with BNL facilities, operations, and work performed are identified,
- **Industrial Hygiene Program** – The Laboratory has established an industrial hygiene monitoring program to identify occupational hazards associated with worker exposure to chemicals, heat stress, noise, lead, and other hazardous substances.
- **Industrial Safety Program** – The Laboratory has established a worker safety and health program to continuously survey workplace conditions and assess hazards in the workplace.
- **Contractor Health and Safety Plans –** The Laboratory's Acquisition Management System provides for the flow-down of ISM clauses to general contractors and lower tier subcontractors and suppliers. One of the deliverables is a detailed Contractor Health and Safety Plan that details the contractor's approach to hazard controls that will protect his workers from the specific hazards on the jobsite. The contractor health and safety plans are reviewed and approved by the cognizant BNL project manager and work is not authorized to begin (Notice to Proceed not issued) until this approval is obtained
- **Operations Authorization/Operational Readiness Review Process**– an ORR is conducted by subject matter experts before a new or upgraded facility is permitted to be occupied, or put in service. This process identifies any hazards that may exist.
- **Annual Laboratory Plan** – Each action described in the ALP has an implementing "Project Plan" that is prepared by the responsible manager. Each of these plans is required to analyze hazards associated with implementing the action.

Core Function 3 – Develop/Implement Institutional Hazard Controls

Institutional level hazard controls are established

- **Requirements management –** The various requirements included in the BSA contract establish limits (hazard controls) on various Laboratory operations.
- **Program Letters –** may establish hazard controls.

- **Institutional limits** – In some cases, the Laboratory establishes limits on various operating parameters that are voluntarily more stringent than the limits in the BSA contract requirements set or program letters. These are incorporated into SBMS. (An example of this is the Lab's administrative radiation exposure limit that is set below the requirement, based on senior management's decision).
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Beyond the requirements set, additional processes that implement Core Function 3 may be thought of in two sub-categories – ***maintaining a safe workplace*** and ***ensuring a safe worker***. The processes that support each of these are described below.

- **Safe Workplace (Eliminating or controlling hazards in the workplace)**
    - The Laboratory has a **Tier I inspection program** that requires managers at all levels of the lab to walk their spaces periodically to identify workplace hazards (permanent and transient), to risk-prioritize them, and to take action to correct them. Workers, subject matter experts, and OSHA trained staff typically also participate in Tier I inspections. Lab-wide Tier I inspection results are briefed to the Policy Council quarterly.
    - A **Condition Assessment Survey (CAS)** is performed on all BNL facilities on a three-year cycle to identify all facility deficiencies including building systems and other features that could potentially impact worker safety. Each deficiency is risk-prioritized through the Lab's 3PBP process and tracked. Risk-based investments are made each year to reduce this backlog.
    - **Fire Hazards Analyses** are performed on BNL facilities to ensure fire hazards are identified and controlled through providing fire detection and suppression systems, life safety design features, and fire department response. Fire protection risk is monitored through the BSA assurance process.
    - **The industrial hygiene, RadCon, and industrial safety programs** described above, through the use of subject matter experts, develop facility operating limits to control identified hazards and identify upgrades to facilities and building systems that eliminate or mitigate potential exposures.
    - The Laboratory's **Operational Readiness Review** process ensures that New BNL facilities (or modifications to facilities – e.g. a lab renovation) are not occupied until identified hazards are corrected.
    - The Laboratory's **Procurement process** assures that construction workplaces are safe through requiring a contractor to identify hazards associated with the construction project and develop an approved Contractor Health and Safety Plan to mitigate them. The Laboratory also uses in-house and consultant "Construction Safety Inspectors" who visit jobsites daily and ensure that the jobsite is in a safe and environmentally compliant condition.

- **Safe Worker (Building a "Safety Shield" around each worker)**
    - **Occupational Safety & Health (OSH)/OHSAS 18001** is the institutional level process that the Laboratory uses to provide for worker involvement in hazard identification for recurring tasks. The **"Job Risk Analysis" (JRA) process** brings together groups of workers and ES&H subject matter experts to assess the hazards and develop hazard mitigations. These hazard controls or "mitigations" include revised work procedures, personal protective equipment, and other actions designed to reduce the risk of specific tasks. All workers who perform the function are briefed on the completed JRA . The JRAs are reviewed annually, and updated

as appropriate throughout the year based on information learned through integrated assessment, lessons-learned, incident critiques, etc. the OHSAS process provides the "safety skill of the craft" needed to ensure complete hazard identification for routine recurring work. The JRAs are integrated into the Work Planning process.

- **Training & Qualifications -** Ensuring that workers are trained and qualified to perform their tasks is accomplished through a **Job Training Analysis (JTA) process.** The process ensures that workers have the training necessary to conduct assigned tasks within ES&H limits. (e.g. electricians are required to have Lock Out/Tag Out (LOTO) training and CPR training). Workers are also required to be qualified to perform tasks typically associated with their craft so that the work they accomplish does not pose a hazard to themselves or others during the act of performing it or after completion. (e.g. electricians assigned to perform high voltage splicing must be qualified to do so to prevent injury to themselves from electrical shock or a fall from heights while performing the splice, and to prevent injury to others after work completion from a catastrophic failure of a faulty splice). Once the JTA is completed for each worker, it is used in work planning to ensure that workers are trained and qualified for the work to be accomplished.
- **Chemical Hazard information –** The Laboratory operates systems that provide the workers and subject matter experts with information about the hazards associated with chemicals and their use in the workplace. The Chemical Management System provides inventory information on each chemical in a given facility as well as providing Material Safety Data Sheets online to make this data readily available to workers, supervisors and subject matter experts engaged in hazard control.
- **Contractor Health and Safety Plans –** The Laboratory's Acquisition Management System provides for the flow-down of ISM clauses to general contractors and lower tier subcontractors and suppliers. One of the deliverables is a Contractor Health and Safety Plan that details the contractor's approach to hazard controls that will protect his workers from the specific hazards on the jobsite. The contractor health and safety plans are reviewed and approved by the cognizant BNL project manager and work is not authorized to begin (Notice to proceed not issued) until this approval is obtained
- **Contractor/Vendor Orientation Training –** All contractor personnel are required to attend a training course on site hazards and emergency procedures. The completion of this training is necessary for them to be issued a contractor ID badge and to access the jobsite.

Core Function 4 – Perform Work Within Controls

Core function 4 or **"doing work safely"** is accomplished through a series of processes at the institutional level.

- **Work Observation –** The Laboratory has expanded its Tier I program that traditionally focused on workplace safety only, to include observation of workers performing work in progress. Worker observation/intervention training has been provided to senior managers and human factors aspects are being applied to the process.
- **STOP Program –** This work observation program focuses on craft labor.

- **Construction Safety –** The Laboratory's construction safety program provides for safety inspectors who visit the jobsite daily to observe work in progress and ensure that contractor workers are complying with the Contractor Health and Safety Plan procedures for the work being performed.
- **Stop Work and Radiological Stop Work Programs –** All BNL staff have the authority to stop work if they believe an ES&H hazard condition exists. Senior management encourages its use and positively recognizes employees who do so.

- **Standards Based Management System -** provides BNL staff with policies, standards of performance, and Laboratory-wide procedures and guidelines (subject areas) that are current, accurate, and relevant to their work. The Laboratory develops policies, standards of performance, and subject areas based on an evaluation of external requirements (i.e., Directives and Federal, state, and local laws) and BSA policies.
- **Work Permit Programs –** A key part of the Lab's Work Planning & Control Management System, work permits prescribe the hazard controls applicable to a particular job and are present at the jobsite when the work is being performed.
- **Environmental Monitoring –** The Laboratory's environmental monitoring program ensures that the Laboratory remains within its permit limits and internally established goals for emissions.
- **The industrial hygiene, radcon, and industrial safety programs** include monitoring of work in progress to ensure the hazard controls are implemented and performing as designed and workers are not being exposed to chemical, radiological, noise, or other hazards.

Core Function 5 – Feedback and Improvement

The principal feedback and improvement tools at the institutional level are the DOE/BHSO evaluation and feedback processes, the Quarterly Performance Review Process, the BSA Assurance Process, the BNL Integrated Assessment Process, the Quality program and the Annual Lab Plan process.

- **DOE/BHSO Evaluation and Feedback Process** – BHSO uses a Quarterly Feedback Report to communicate key concerns, issues, and observations to Laboratory senior management. BHSO also evaluates BNL's performance on the contract critical outcomes annually.
- **Quarterly Performance Review Process** – The Laboratory's Policy Council reviews critical outcome performance, management system performance, and a set of other institutional performance measures on a quarterly basis. Typically, follow up meetings are held between the Laboratory Director and Critical Outcome owners or management system stewards reporting less than excellent performance. Where appropriate a reallocation of resources is made.
- **Integrated Assessment Process** - This process requires that Management System Stewards analyze the following inputs, identify deficiencies, and recommend related ***improvement actions*** that are needed in the Annual Laboratory Plan for the current year based on the Lab's performance in the year just completed. The results of this process are documented in an annual Integrated Assessment Report for the Laboratory that becomes one of the three principal sources of data for the Annual Lab Plan.
  - **Internal and External Assessments** conducted in the year just completed are reviewed and analyzed by the management system stewards. These include DOE HQ

and BHSO reviews, DOE IG audits, BNL IA/IO reviews and audits, line organization self assessments and management system steward assessments.

- **Contract Performance Evaluation Measurement Plan Results** (year just completed)
  The contract goal and objective outcomes are a combination of measurements and assessments of key Lab projects and processes. PEMP objectives that are rated less than Excellent by DOE will typically be evaluated for necessary improvement actions by the cognizant management system steward.
- **Contractor Assurance Process (Risk metrics)** The BSA assurance process focuses on metrics and assessments that look at the Lab's activities from a risk perspective. If one or more of these risk measures are indicating a condition that poses an unacceptable risk to the Lab, the BNL Risk Committee counterpart will bring this to the attention of the cognizant management system steward(s). The steward(s) will identify recommended corrective actions in the Integrated Assessment Report.
- **Incident/Event Investigations, PAAA reportable conditions, Lessons Learned** are all sources of information on the Lab's performance and needed corrective actions. These items are reviewed by the management system stewards as part of the integrated assessment process.
- **Environmental Management System and OHSAS Management System Reviews** These reviews are conducted at the Policy Council/Management Council level and are the principal source of performance information about these two management systems. The management system stewards use the results of these reviews to generate recommendations for corrective actions within the annual Integrated Assessment Report.
- **Assessment Tracking System (ATS)** – The Lab's ATS system collects and tracks findings, recommendations, and associated corrective actions. It is a primary source of data for line managers and management system stewards.

- **Quality Program –** The Laboratory's quality program provides several feedback mechanisms including nonconformance reporting, radiological awareness reports (RARs), and counterfeit and suspect parts issues.
- **Construction Safety Program** – The BNL construction management program is used to assure that contractors assign top priority to protection of the public, workers and the environment. In addition to contract clauses that provide specific requirements, including ISM flow-down provisions, each contractor is evaluated for safety compliance and formally rated at the end of the project. Contractors proposing to do work at the Lab are evaluated based on a set or criteria that includes their past safety performance both within BNL (if applicable) and on other projects. A poor safety rating can (by itself) eliminate a contractor.
- **Annual Lab Plan (ALP) Process –** This process completes the ISM cycle by providing for the improvement to Lab facilities, systems, and processes. It takes as its input, the output of the "feedback processes", the Integrated Assessment Process, the Business Plan, and other improvement actions that are rolled up from the various Lab organizations. (Please see Core Function 1 for a more detailed description of the Annual Lab Plan process)

Guiding Principles

The Laboratory's implementation of the guiding principles provides the "platform" on which the Core Functions are performed. As with the core functions, the Laboratory uses its set of SBMS Management Systems to establish the requirements and processes to ensure this "platform" is effective.

Guiding Principle 1 – Line Manager Responsible for Safety

Line management is directly responsible for the protection of the worker, the public, and the environment

Guiding Principle 2 – Clear Roles and Responsibilities

Clear and unambiguous lines of authority and responsibility for ensuring safety shall be established and maintained at organizational levels within the DOE and the contractors.

The Human Resources Management System provides the processes for developing and maintaining formal Roles, Responsibility, Authority, and Accountability (R2A2s) documents for all staff. The R2A2s demonstrate that line managers have responsibility and accountability for ES&H and indicate how the responsibilities flow from the Laboratory Director to the workers. These R2A2s provide a clear baseline of individual responsibilities for all aspects of BNL's work, including ES&H. The institutional requirements are administered through a subject area. The subject area is designed to ensure managers consider an individual's roles and responsibilities with respect to ES&H performance expectations commensurate with their work activities.

Additionally, responsibilities specific to the management systems are also defined in Laboratory-wide SBMS documents (Management System Descriptions, Subject Areas, Facility Use Agreements) and establish clear, context-specific roles and responsibilities for controlling hazards associated with all work.

The Laboratory is responsible for the safety and environmental performance of its contractors. The Lab's acquisition management system flows down ES&H requirements to its contractors.

Guiding Principle 3 – Competence Commensurate with Responsibility

Personnel shall possess the experience, knowledge, skills and abilities that are necessary to discharge their responsibilities

The third Guiding Principle for integrated safety management, Competence Commensurate with Responsibilities, focuses on the experience, knowledge, skills, and abilities necessary for personnel to carry out their assigned responsibilities. Within Brookhaven, this Guiding Principle is addressed by numerous processes that begin before selecting and hiring staff and continue during staff indoctrination and orientation, initial training and qualification, and throughout the staff's employment. The primary focus of these processes is to ensure that staff are technically competent to safely perform their assigned duties, which is the responsibility of line management and is supported by the Training and Qualification Management System and the Human Resources Management System. Key elements of the life-cycle maintenance of a staff member's technical competence are described below.

The Human Resources Management System establishes the processes for Staff Requisitions. The development of position postings include an evaluation of minimum experience and

education requirements. These requirements are defined by the organizational manager wishing to fill the position. HR verifies that the minimum experience and education requirements are satisfied for new hires and staff transfers. Formal interviews are conducted and documented for potentially qualified applicants. Additionally, BSA is committed to proactive leadership development activities, which strongly supports the Competence Commensurate with responsibility ISMS topic. For example, the 3600 Feedback Leadership Development Process was designed and implemented to identify and develop leadership competencies most relevant to BNL's current priorities, with appropriate emphasis on safety and environment.

Once hired, the new staff members undergo several processes to prepare them for assigned work. The processes and framework for managing initial and continuing training are documented in the Training and Qualifications Management System. The technical content of training needs is established by line managers. Training required by ES&H regulations is established by the ES&H management systems (e.g., Worker Safety and Health, Radiological Control, Environmental Restoration). New employee's initial training needs are reviewed and assigned according to the New Employee/Guest Orientation procedure. In addition, employees are linked to the relevant Job Training Assessments for the duties and tasks that they will perform. These assessments document essential job elements, potential exposures to hazards, and related training requirements. New employees attend new hire orientation, which includes new hire safety orientation and training. The job training assessments provide staff, their managers, and their training coordinators with a means of establishing and tracking all mandated training, including ES&H training. The training assessments are reviewed at least annually. Training and qualification activities are documented in the Brookhaven Training Management System, which is the laboratory-wide database Brookhaven uses for recording and tracking training.

Continuing training is provided to maintain or improve job-related skills and proficiency and to meet retraining requirements. In addition, Brookhaven employs a Lessons Learned Program to disseminate information for use in initial and continuing training, to keep staff informed of lessons learned. The ES&H Directorate publishes the Safety and Health Services Division Information Bulletin that serves to augment the Lessons Learned Program and also provide lessons learned discussions in ES&H Coordinators Meetings.

The accountability processes (e.g., performance evaluations and mechanisms for reward and discipline) for monitoring and ensuring R2A2s are carried out, are also provided through the Human Resources Management System.. Evaluation of the effectiveness and efficiency of training/competency programs are included in the scope of assessment activities as part of the integrated assessment program discussed in more detail under the above discussion of Core Function 5 - Feedback and Improvement.

Under the Laboratory’s Construction Safety Program, contractor personnel and subcontractor personnel are required to be qualified for the work they perform (based on data provided by references, and BNL’s prior experience with a given contractor).

Guiding Principle 4 – Balanced Priorities

Resources shall be effectively allocated to address safety, programmatic, and operational considerations. Protecting the public, the workers, and the environment shall be a priority whenever actions are planned or performed.

The principal institutional level process for ensuring balanced priorities in decision making is the Integrated Planning Management System (IPMS). Within IPMS, the Business Plan and Annual Lab Plan have processes that use risk based methods to prioritize ES&H related actions.

- **Project Planning Programming and Budgeting Process (3PBP)** – The 3PBP process is used by the Policy Council to prioritize proposals submitted by Laboratory organizations for the use of General Plant Projects (GPP) and Operating Funded Projects (OP). The process includes specifically identifying projects with ES&H impact and using the DOE "Risk Prioritization Model" (RPM) to rank order the projects, followed by applying an additional priority process that related to the Lab's Critical Outcomes. The final decision on project priority and resource allocation is made by the Policy Council. BHSO participates in the prioritizing process, reviews the final list and concurs.
- **Annual Lab Plan (ALP)** – This planning process prioritizes the various actions identified in the Business Plan and the Integrated Assessment process, as well as proposed improvement actions submitted by line organizations. A risk-based methodology is used similar to the 3PBP process.

Guiding Principle 5 – Identify ES&H Standards & Requirements

Before work is performed, the associated hazards shall be evaluated and an agreed-upon set of safety standards and requirements shall be established which, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences.

DOE/BHSO establishes the initial set of ES&H standards and requirements in the BSA contract. This set is continually modified as new requirements emerge and existing ones change.

The Laboratory's SBMS system is used to ensure that all applicable ES&H standards and requirements required in the BSA contract are deployed down to the worker level. The Requirements Management function within the BNL Quality management Office receives new incoming requirements and administers the process of management system steward(s) review of the new requirement and its integration into the appropriate SBMS documents, through the Record of Decision (ROD) process.

Guiding Principle 6 – Hazard Controls Tailored to Work

Administrative and engineering controls to prevent and mitigate hazards shall be tailored to the work being performed and the associated hazards.

The BNL processes used to identify and analyze hazards and establish controls occur in two arenas. First, the Standards Based Management System provides the processes and support necessary to incorporate worker involvement to establish appropriate Laboratory-wide procedures and guidelines (known within SBMS as Subject Areas) to control the hazards that are part of the BNL hazards baseline. The process results in procedures that are tailored to enable staff to accomplish their work safely, efficiently, and effectively. The second area, i.e., planning and controlling work, is provided through the Work Planning and Control Management

System. This system is responsible for providing the Laboratory-level procedures and expectations for integrating operational (including ES&H) considerations into planning and controlling experiments, routine operations, and projects. The processes and procedures for each of these activity areas rely on strong worker involvement (including pre-job walkdowns) to insure that the staff involved with the activities understand the hazards, the specified controls (included required training), and their performance expectations for performing the work.

Guiding Principle 7 – Operations Authorization

The conditions and requirements to be satisfied for operations to be initiated and conducted shall be clearly established and agreed upon.

The BNL processes governing the start-up review/authorization of new or significantly modified facilities are provided by the Facility Safety Management System. The readiness review/startup authorization provides a graded approach to formal operations authorization for turnover from modification/construction of a facility to formal operations for the entire spectrum of facilities operated by BNL. Once authorized for operations, the Facility Operations Management System provides the basis for establishing and maintaining the facility operations envelope through the Facility Use Agreements.