Brookhaven National Laboratory

Focused Management Review
August 22-26, 2005

BNL Focused Management Review

- Review Team

Team Leader

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Team Members

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- Two phase evaluation
  - Phase I July 19-22, 2005
    - Comparative TimeLine used to identify causal factors for Phase II analysis
      - 480 Volt Conduit Strike Bldg. 480
      - Occupational Injury from Conex Lid fall

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- Phase I Results
  - Work Planning & Control
    - Hazard Analysis
    - Change Process
    - Field Supervision to maintain controls
      - Integrated Assessment Process
      - Application of lessons learned
  - Integrated Assessment Process
    - Applications of Lessons Learned
  - Facility Safety
    - Operational Readiness Review

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- Phase II
  - Evaluate causal factor from Phase I in two selected organizations
    - Collider-Accelerator Department
    - Plant Engineering Division
  - ISMS Assessment Form used to document evaluation

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- The Work Planning & Control Management System self-assessment had begun prior to this review.
- The Team decided to use the recently developed self-assessment criteria to evaluate effectiveness of program, as well as evaluate the tool.

Key Elements/Measures	Candidate Indicators of Performance (Sample Checklist)	Indicator Definition/Metric
1.1 Currency and Completeness of Qualifications - Personnel qualifications (job-specific requirements) are current and those qualifications are periodically reviewed	**1. % staff with current JTAs** **2. % staff with JTAs covering all functions performed** **3. ERC completion rate for WPC training**	**5 = 100%-95% current qualifications and/or JTAs** **5 = 100%-95% requalifications achieved** **5 = 100%-95% complete JTAs for all functions** **3 = 95%-85% current qualifications and/or JTAs** **3 = 95%-85% requalification achieved** **3 = 95%-85% complete JTAs for all functions** **1 = <85% current qualifications and/or JTAs** **1 = <85% requalification achieved** **1 = <85% complete JTAs for all functions**
1.2 Competency of Personnel - Personnel have demonstrated competency in the relevant work planning and control functions (including awareness and control of hazards)	**4. Knowledge/skill related to job (functional) requirements** **5. Knowledge of experimental hazards and controls** **6. Knowledge of authorization limits/abnormal conditions**	**5 = Highly skilled** **5 = Completely knowledgeable of job function, experiment, authorization limits, and potential abnormal events** **3 = Moderately skilled** **3 = Reasonably knowledgeable of job function, experiment, authorization limits, and potential abnormal events** **1 = Limited skills** **1 = Limited knowledge of job function, experiment, authorization limits, and potential abnormal impacts**
1.3 Rigor and Effectiveness of Training - Training provides the necessary information on the key elements of work planning and control	**7. Effectiveness of line provided training activities** **8. Frequency of line provided training needs evaluations**	**5 = Training activities highly relevant to work, effectively communicate all necessary information, and provided at least annually** **5 = Training and qualification activities frequently evaluated, and reviews lead to identifiable improvements** **3 = Training activities generally relevant to work, include critical information, and provided less frequently than annually** **3 = Training and qualification activities periodically evaluated, and reviews lead to some improvements** **1 = Training activities of limited value** **1 = Training and qualification activities rarely examined for adequacy or improvements**

1. Hazard Evaluation and Control Process

Collider-Accelerator Department

Strengths:

- Job Risk Analyses (JRAs) are developed with multidisciplinary involvement and represent a formalized planning tool.
- Walkdowns provide an opportunity for workers to understand job scope and review the hazards present as well as the appropriate controls. These are always performed for high and moderate hazard jobs.
- A draft procedure for pre and post-job briefings based on Institute of Nuclear Power Operations (INPO) good practices is in development.
- Worker involvement has increased through the JRA process and more frequent job walkdowns.

1. Hazard Evaluation and Control Process

Collider-Accelerator Department

Issues:

- JRAs, once developed, are rarely referenced in the planning documents or used by workers.
- For a high hazard job, a Job Safety Analysis (JSA) was required. The documentation supplied did not meet the format and content of a JSA as defined by Standards Based Management System (SBMS).
- Fewer than ten percent of Work Permits contain worker feedback comments.
- Work Plans contained in Work Permits are often brief and do not completely describe the tasks to be performed.
- Expectations for performing walkdowns have not been formalized. Workers have suggested that walkdowns be done further in advance of the job.

1. Hazard Evaluation and Control Process

Plant Engineering Division

Strengths:

- The use of EP-ES&H-500 *Project Environmental, Security, Safety and Health Review* procedure and the 500A Form for initial hazard and control identification during conceptual design.
- Effective use of the pre-job briefs to communicate, discuss, emphasize BNL contract requirements and expectations to steel erectors for Research Service Building.
- Effective communication and flowdown of BNL requirements to the contractor.

1. Hazard Evaluation and Control Process

Plant Engineering Division

Strengths: (Continued)

- Effective use of pre-job briefs and walkdowns to reduce the hazard level and complexity of work at the RSB and Biology Laboratory Renovation.
- Targeted use of the work permit process for effective control of multiple hazardous tasks for the Biology Laboratory Renovation.

2. Work Within Controls

Collider-Accelerator Department

Strengths:

- All observations and interviews indicated personnel knew the hazards associated with the job, the controls called into place and the limits on their authorization to perform work.
- Authorization to begin work for jobs covered by work permits was clear, with appropriate reviews in place.
- Significant lessons learned that have been identified through critiques drive changes to procedures.
- All personnel interviewed understood stop work authority

2. Work Within Controls

Collider-Accelerator Department

- Issues:
- There was no documentation showing the conduct of pre-job briefings, nor the subjects covered.
- Awareness and authorization of work by the building managers is not formally required. Informal communications may mitigate this issue to some extent.
- One instance was noted of a worker had not placed his own lock on locked out equipment that was required to be locked out in accordance with the work permit.
- There is no documentation indicating that lessons learned on skill of the craft jobs are captured and acted upon.

2. Work Within Controls

Plant Engineering Division

Strengths

- CFN construction project planning included safety initiatives that augment BNL's existing construction safety processes. These include:
  - Development of a plan for communicating critical safety aspects and risks to all project organizations.
  - Inclusion of subcontractor selection criteria as a contract requirement.
  - Use of an independent construction safety professional.
  - Inclusion of contract terms and conditions for a $100,000 safety performance bonus.
- Work approval and authorization is well understood and implemented at RSB.

3. Feedback and Improvement

Collider-Accelerator Department

Strengths:

- Lessons learned from significant events (e.g. SLAC accident) are incorporated into procedures, training and work practices.
- All personnel interviewed (Technical Supervisors, Workers, and Facility Support staff) indicated that they had adequate input to the work planning process.

3. Feedback and Improvement

Collider-Accelerator Department

Issues:

- Post-job briefings are infrequently documented. Self-identified in September 2004, this is still an issue.

3. Feedback and Improvement

Plant Engineering Division

Strengths:

- Lessons learned program has been effective at communicating events and improvements from the conduit strike.
- Oversight of the RSB and Chillers project by the ESH&TQ Safety Inspector is effective and well documented.
- The PE Safety Inspection Report Summary is an effective tool for trending of contractor safety performance.

3. Feedback and Improvement

Plant Engineering Division

Issues:

- The RSB Site Safety Representative (general contractor) is not documenting all inspections per contract requirements.
- Additional detail in the comment section of the Contractor Evaluation Form would better articulate the significance of marginal and unsatisfactory rating.
- SHSD should develop requirements for the documentation of field observations by safety representatives.

3. Feedback and Improvement

Plant Engineering Division

Issues: (Continued)

- Independent Oversight and Internal Audit needs to improve the timeliness of its reports from inspection walkthroughs of projects.
- Inspection reports from Liberty Mutual are not being communicated to ESH&TQ for inclusion in the Safety Inspection Report process.
- Performance measurements could be improved for the eleven evaluation criteria used for BNL's construction contractor evaluations.

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General Observation

- Given the size, complexity, hazards present and the capital investment in C-AD, a greater formality in planning and documenting low hazard jobs has the potential for increased worker safety and reducing human performance problems.

Next Steps

- Completed ISMS Assessment Forms will be submitted to BHSO for BNL factual accuracy review.
- BNL will have one week to review ISMS Assessment Forms for factual accuracy.
- The draft report will be generated based on ISMS Assessment Forms and factual accuracy comments.

Next Steps (Continued)

- Draft Report will be submitted to BHSO for factual accuracy review by BNL.
- BNL will have one week for factual accuracy comment generation.
- Final report will be developed incorporating factual accuracy comments.
- Final report is due to the Site Manager by September 28, 2005.